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THE CONCEPT OF BUSINESS MODEL AND MODELLING OF FIRMS IN ECONOMICS

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Abstract

Ever since firms have existed, they have been constantly adjusting and readjusting their behavior and structure when reacting to the changes in the business environment and technology. However, the concept of business model only emerged and grew in popularity after the internet boom of the late 1990s. More than two-decade long research regarding the topic has produced a large quantity of research originating from various scientific disciplines, among which economics is still being underrepresented. Regardless of the high quantity, the comprehension or interpretation of the concept remains highly heterogenous. This thesis aims to thoroughly map out the term's history as well as its nuanced theoretical and empirical development, in order to construct a business model framework that is both applicable for economics and inclusive regarding the prior research efforts. After providing the reader with a new inclusive definition for the term, the modelling practices are first assessed in theory and then in practice by analyzing the existing empirical research on the topic. Finally, the newly defined micro-firm level concept of business model is linked to a micro-firm and macro-industry level concept of the structure-conduct-performance paradigm, and therefore to the industrial organization branch of economics.

Keywords

Business model, business model innovation, economics, industrial organization, structure-conduct-performance paradigm

Additional information

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1 INTRODUCTION

A two decade-long research effort on the concept of business model (BM hereafter) across multiple disciplines has produced a large number of theoretical publications and a modest but constantly growing number of empirical research results. However, as the concept has been observed through numerous different subject lenses, the theory, and the BM research field itself remain disorganized and disconnected both internally and from the economic theory, even though some disciplines within the research field have made a significant progress e.g., strategy orientated research. Written from primarily economic and secondarily performative BM research perspective, this thesis sets to consolidate the scattered theory and to connect it to a bigger picture of economics.

BM is a part of a common vocabulary among the second millennium business practitioners and academia concentrating on studying the business world. However, what is meant by it varies greatly between the different interest groups. Business practitioners, accountants, and consultants, not to mention the academia operating under several separate disciplines, all have presented and developed separately their own versions of the BM concept, what it means and from which parts it consists of. Considering the variance between the definitions this thesis proposes a conciliatory approach by offering an inclusive working definition for the concept: Business model is an umbrella term for the purposeful simplification and division of a business into essential variables, based on the intended purpose of use of the model. This proposition, as will be later explained in a more thorough manner, considers the business model as an economic model, that is used for describing the relevant settings of a firm constituting to its performance. These settings could include any commonly used variables such as value creation logic, target market, or key inputs of the firm. The performance can be measured in both numerous different ways, depending on the intended purpose of the use, but could signify e.g., valuation of firm's stock, market share or revenue. This way, the BM concept can maintain its double function as narrative (e.g., in strategic management literature) and calculative (e.g., in finance or applied economics) device.

To build a bridge between the economics and the existing BM theory, the concept is inspected from top to bottom. First by going through the historical development and growth of popularity of the concept, then by covering the different definitions and choices of variables for the BMs that have been proposed during the last twenty years by a wide array of academics. Then the relationship between financial reporting and BMs is covered, to better understand how the concept is applied and measured in practice. After this the static concept of BM is extended into a dynamic concept as the business model innovation (BMI) research is covered briefly. Then as theoretical groundwork is covered, the author of this thesis offers the before mentioned working definition for the BM, that is applicable with majority of the existing theory and supports the idea of BM being first and foremost an economic model. Then the theoretical underpinnings of the newly defined BM concept are set regarding the theoretical framework, the choice of variables and the modelling practices. After covering the theoretical aspects of the BM concept, seven different empirical research papers leveraging BMs are analyzed, in order to demonstrate how the concept has been utilized in an applied economic research and what implications it withholds. In the subsequent chapter the plausible connection between BMs and industrial organization is presented by synthesizing a micro-firm level BM concept with macro-industry level structure-conduct-performance paradigm. In the end of the thesis, the concerns regarding the BM concept are voiced followed by the conclusions and prospects for the future research.

2 CONCEPT OF BUSINESS MODEL

Despite the popularity of BM as a term, the academia has not managed to reach a consensus regarding the question: what is a BM? To understand something, that is not yet exactly defined we must first look at the past and by doing so, at least try to see the forest for the trees. In this chapter we will first look at the history of the BM term, including a small quantitative literature analysis of the research field. Then we will look at the myriad of definitions suggested for the term and later proceed naturally into breaking the model in smaller parts, in both cases listing different approaches in chronological order. Subsequently, financial reporting practices of BMs within different institutions are inspected. After this, a major stream of BM research, BMI is covered briefly. In the second last subchapter, the author of this thesis will suggest a conciliatory approach for defining the BM concept. Lastly, an idea of optimizing the BM concept and modelling practices for an economic research are entertained.

2.1 Historical overview of business models

The exact term “business model” was first used in an academic publication in 1957 (Bellman, Clark, Malcolm, Craft, & Ricciardi, 1957), where it was used as a sort of a pedagogical problem-solving tool. The initial purpose of the BM for Bellman et al. was to describe an abstract process of simplifying a certain function of the firm, that was central to the problem at hand, as a model. This concept of BM was then used to map out the behaviour of the system by direct experimentation. BM term was first adopted by strategists but appeared rarely in academic writing or elsewhere during the following decades until its proliferation in the late 1990s (DaSilva & Trkman, 2014), when the so-called dotcom firms begun using BM in their sales pitches for attracting funding (Shafer, Smith, & Linder, 2005). As Michael Lewis (1999, p. 256) wrote at the height of the then present dotcom boom, regarding the terms use in the Silicon Valley:” Business model is one of those terms of art that were central to the Internet boom: it glorified all manner of half-baked plans. All it really meant was how you planned to make money”. The quote was written down in 1999 when the terms popularity was already noted in the Silicon Valley but only during the following decade, the terms popularity rose significantly. During that time, a report by European High Level Expert Group titled The Intangible Economy Impact and Policy Issues

(Eustace, 2000), argued that there had been a transition from *an old market* to *a new market*, where intangible investments, including concepts such as research and development, intellectual property, workforce skills, brands and global supply networks had reached a critical mass and now played a central role. A market which could not be explained purely by the orthodoxy of classical economics and accounting and therefore required new methods for measurement and communication.

A quantitative literature analysis was conducted to form a better picture regarding the popularity of the term. The continuous black line in Figure 1 illustrates the number of annual publications indexed by the Google Scholar that include an exact term "business model" either in the title or in the content (excluding citations and patents) from 1990 to 2019[1]. First notable thing is that the results increased by more than nineteenfold from 2080 annual publications in 1999 to 2019, when the term was used in 40500 publications in just one year. The second interesting point is that the term's popularity in fact seems to have peaked in 2017 and it has been on a steady decline two years since. There were concerns on whether the downturn is caused by a mere technicality, such as latency in Google's unrevealed indexing process. However, neither the percentage change of total publications for each year compared to the percentage change of BM publications[2], nor the benchmark variables with real values suggested such. As a side note and comparison, the annual publications during the 20-year period from 1999 to 2019 grew twofold from 6620 annual publications to 18900 for the term "microeconomics", over fivefold from 3260 annual publications in 1999 to 17900 in 2019 for the term "business plan" and over hundredfold for "big data" from 968 annual publications in 1999 to 98000 in 2019. Afterwards, it was revealed to the author of this thesis that a similar analysis had been already performed by Nielsen et al. (Nielsen, et al., 2019). However, the *original* analysis covered the years 1980-2017, therefore it could not detect the peaking of the popularity and did not include additional search queries for comparison.

[1] It is also worth noting that the Google Scholar does not publish the total number of publications that they currently index, but Michael Gusenbauer (2019) estimated that it included 389 million publications, making it the most comprehensive academic search engine in 2018.
[2] The graph and further analysis can be found in the appendix.

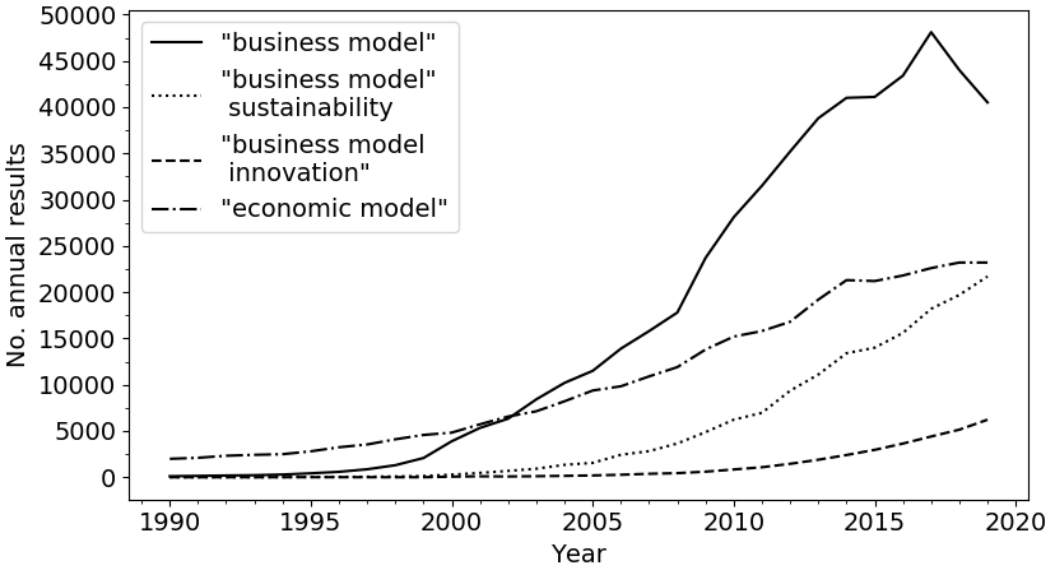

Figure 1. Number of annual BM related publications indexed in Google Scholar.

The quantity of publications regarding the topic is staggering and it should not come as a surprise that during only the last decade, at least five special issues focused solely on BMs: The Long Range Planning in 2010, the Journal of Cleaner Production in 2013, the Strategic Entrepreneurship Journal in 2015, and the Sustainability and the Organization & Environment in 2016 (Peric, Durkin, & Vitezic, 2017). Or that in 2013, a whole journal devoted to BMs was founded, named fittingly the Journal of Business Models. In 2017, the first annual Business Model Conference was orchestrated and at the time of writing this thesis in 2021, three conferences had been organized.

The almost two decades of exponential increase in quantity has brought about a variance in quality. During this time, BM has become an important concept on many different fields, such as technology and innovation management, strategy, environmental sustainability (attested by Figure 1.) and social entrepreneurship (Massa, Tucci, & Afuah, 2017). Regarding sustainability, it must be noted that especially in the earlier research the term sustainability used to refer to economic or practical sustainability, rather than environmental sustainability. Regardless of this, in last decade, the number of papers concerning BMs and environmental sustainability has increased drastically, and as we shall see later in the chapter 2.1.3, such approach to BM has even made it to the directives of the European Union (EU). BM has also been overlapping or used together with the concepts of resource-based view (RBV),

transaction cost economics (TCE), revenue model, business concept, business process modelling, business plan, value creation, globalization, organizational design and previously mentioned economic models (DaSilva & Trkman, 2014; Morris, Schindehutte, & Allen, 2003). [3]

Due the high quantity of publications and the vast variety of subjects that can be viewed as BM research, it can be rather difficult to perceive the whole scope of the field and to understand the depth to which each branch of research has reached. A useful, although partial, overview is offered by Cuc (2019), who conducted a bibliometric analysis of 500 most cited BM articles in Web of Science database, focusing on subject areas of management, business, finance, and economics. From the Figure 2 illustrating the keyword density, we can see that the central themes are firm performance, management, and BMI, followed by RBV and disruptive innovation.

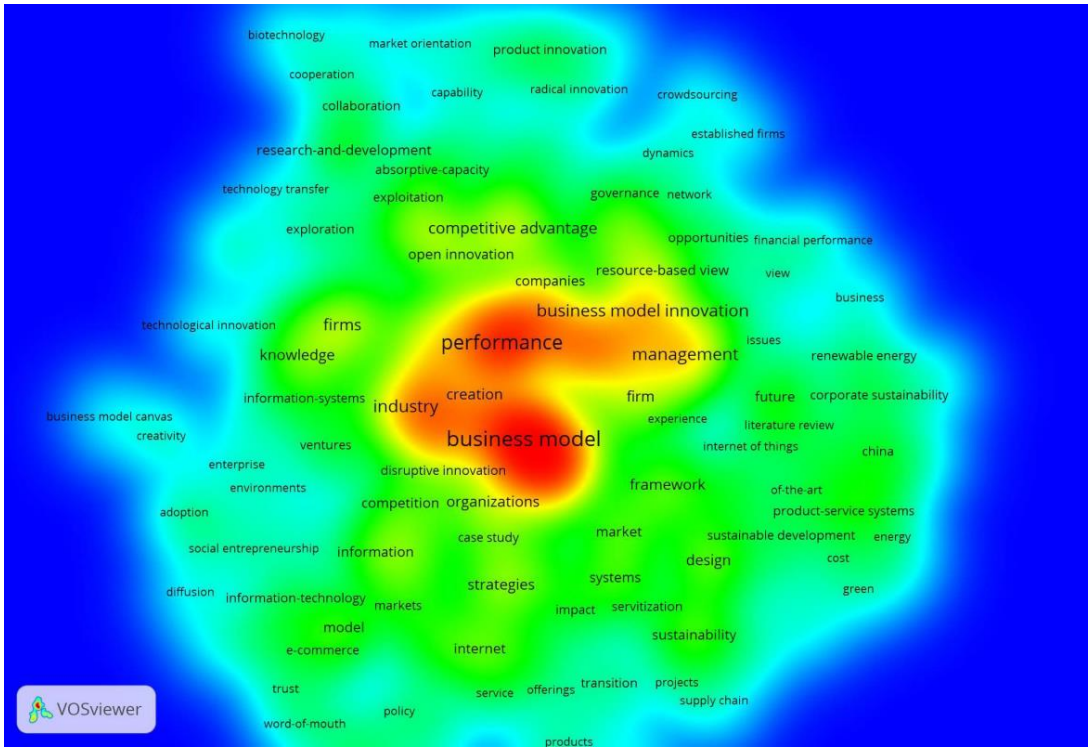

Figure 2. Business model research co-occurrence of keywords density visualization (Cuc, 2019).

[3] The author of this thesis is aware that there exists a body of research literature that leverages BM concept, as well as microeconomic concepts, such as opportunity cost in technological research, under the domains of energy system and wireless domains. However, this branch of research is excluded from this thesis.

2.1.1 Some definitions for the business model from academic literature

When inspecting the numerous different meanings that researchers, alongside with business practitioners, have been trying to convey through the BM term throughout its history from 1950s onwards, it appears that much of the noise was caused by a lack of vocabulary to describe or explain the situation in the market. A similar argument has been presented by Massa, Tucci and Afuah (2017), who reasoned that the one of contributing factors to the variance in interpretations of BMs is the fact that BM concept has been studied and leveraged by scholars from many differing scientific disciplines and consequently the BM concept has been viewed through different academic perspectives. As discussed in the previous chapter, the origin of the term is of academic nature, yet the extent of the term's modern usage owes to the pragmatic use and development in the business sector (Rasmussen, 2007). Initially, a large portion of the academic research regarding BMs focused on technology, particularly e-business, but was primarily concentrated on two complementary streams: classification of companies into BM groups based on qualitative similarities between them and specifying the definitions of variables of BMs (Malone, et al., 2006). Later, another BM stream diverged that was more focused on the strategic and operational dimensions of the business and which endeavored to draw a more generalized picture of the firm. A third stream, focused on the economic dimensions of the firm and emphasizing the profit generation has been present since the beginning of the BM research (Peric, Durkin, & Vitezic, 2017). Alongside and in addition to these efforts, the academia has proposed numerous different definitions for BM, here are several proposals throughout the years listed in chronological order.

A strategic management research by Amit and Zott (2001) was based on 59 case studies on American and European digital businesses, at the time a novel way of doing business that was central for the early BM research and aimed to explore the theoretical foundations of value creation in digital companies. The findings of their research suggested that the scope of entrepreneurship and strategic management theory was lacking when trying to explain the value creation potential of e-businesses. They then proceeded to offer a BM construct as a unit of analysis for future research on digitally operating firm value creation. For this purpose, Amit and Zott (2001, p. 511) defined the BM as describing: "the design of transaction content, structure, and governance so

as to create value through the exploitation of business opportunities". In a widely-cited and strategy orientated BM research, Joan Magretta (2002, p. 4) argued that a strength of the BMs lies in the story:" They are, at heart, stories – stories that explain how enterprises work. A good business model answers Peter Drucker's age-old questions: Who is the customer? And what does the customer value? It also answers the fundamental questions every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?". Albeit emphasizing the story side of BM, Magretta points out that these stories should be also supported by actual measurements or pass the so-called *number test*.

Morris, Schindehutte, and Allen (2005) conducted a content analysis of BM definitions published before the 2003 and summarized that the definitions belonged in three general categories: economic, operational, and strategic. After concluding that the model must be more than the sum of its parts they proposed a definition (2005, p. 727): "A business model is a concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets". Osterwalder, Pigneur and Tucci (2005, p. 10) took a semantic approach by first defining models and business. Then they parsed together a definition of BM that was broad enough to embrace the different meanings that people held for BMs in both the survey and the academic literature synthesis that they conducted: "Business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams". Shafer, Smith, and Linder (2005, p. 202) concluded after their BM research field meta-analysis that a good definition should integrate and synthesize the earlier research efforts on BMs and concluded with a definition: "a business model as a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network".

Brousseau and Penard (2007) concentrated their efforts on creating a typology and framework for analyzing digital BMs. They defined the BM as (2007, p. 82): “a pattern of organizing exchanges and allocating various costs and revenue streams so that the production and exchange of goods or services becomes viable, in the sense of being self-sustainable on the basis of the income it generates”. Five years after their previous suggestion, Osterwalder and Pigneur (2010, p. 14) give a prompt and widely adaptable definition for BM: “A business model describes the rationale of how an organization creates, delivers, and captures value”. Teece (2010), explored the connection between BMs and business strategy, innovation management and economic theory. He states that whenever a firm is founded, it either implicitly or explicitly employs a BM, a seemingly obvious yet fundamental assumption for the BM theory. According to Teece (2010, p. 173): “A business model articulates the logic and provides data and other evidence that demonstrates how a business creates and delivers value to customers. It also outlines the architecture of revenues, costs, and profits associated with the business enterprise delivering that value”. Thinking along similar lines but drawing them even further, Kaplan (2011) suggested that BMs do not only apply for private sector but all organizations. He reasons that every organization has been founded for a purpose and therefore has a viable way of creating, delivering, and capturing value. The value can take many forms, not only financial, but should the organization fail in delivering it, it eventually ceases to be. Magretta (2002, p. 4) claimed that all BMs are: “variations on the generic value chain underlying all businesses”, in response to which Teece (2010) stated that BM requires a functional value proposition to the customer as well as a value capture mechanism in order to be sustainable.

George and Bock (2011, p. 99) used a brief and practical definition of BM in their research regarding the concept’s practical implications for entrepreneurship research: “the design of organizational structures to enact a commercial opportunity”. Baden-Fuller and Haefliger (2013, p. 419) see the concept from a strategic management viewpoint and note that while BMs are fundamentally linked with technological innovation, they define BMs as: “a system that solves the problem of identifying who is (or are) the customer(s), engaging with their needs, delivering satisfaction, and monetizing the value”. As mentioned earlier, a large portion of the, especially early, academic research on BMs focuses on the digital or e-businesses (Malone, et al., 2006). Similarly observed by DaSilva and Trkman (2014), the popularity of the BM

term is intrinsically connected with technology-based companies. Later, digital economics have shown that development of digital technology drastically lowered the search, replication, transportation, tracking and verification costs (Goldfarb and Tucker, 2019). A substantial and very unexpected change, which in turn enabled for the emergence of firms that operated and generated value in a manner unimaginable before the digital era. This connection combined with the concepts of RBV and TCE led DaSilva and Trkman (2014, p. 383) to argue that: “the core of a business model is defined as a combination of resources which through transactions generate value for the company and its customers”.

Gassmann, Frankenberger and Csik (2014, p. 14) concluded: “In sum, a business model defines who your customers are, what you are selling, how you produce your offering, and why your business is profitable. Who-what-how-why describes a business model of which the first two (who and what) address its external aspects and the second two (how and why) address its internal dimensions”. According to Wirtz, Pistoia, Ullrich, and Göttel (2016, p. 6), who analyzed BM research from a strategic management viewpoint, BM: “is a simplified and aggregated representation of the relevant activities of a company”. Similarly, to Wirtz et al., Lanzolla and Markides (2020, p. 3) approach BM concept from the strategic management point of view and draw the definition of BM from the earlier studies: “an activity system that is centered on a focal firm and spans its internal/ external boundaries to bridge value creation with value capturing”.

2.1.2 Business model classification and variable definitions in academic literature

Classification, listing, ordering or other grouping of objects under investigation into constructs, is the most central task in all forms of science (e.g., Bailey, 1994; Carper and Snizek, 1980; Crawson, 1970 via Mäkinen & Seppänen, 2007). The endeavor to change a vague concept of early BM into a solid scientific theory has led researchers to develop a multitude of typologies and taxonomies. Researchers of organizational theory draw a distinction between typology and taxonomy on grounds that where typologies are “theoretical and ideal”, whereas taxonomies are empirically grounded (Mahadevan, 2000). Typological classification of a phenomenon serves two purposes: by creating an order out of a possible chaos of discrete and heterogenous observations

it enables the observer to search and predict relationships between phenomena that are seemingly disconnected (Sills, 1968 via Mahadevan, 2000). A model is fundamentally a classification system that consists of variables, (often referred in BM research as objects, elements, or components), that in turn either are or are not connected by logical and/or quantitative relationships (Mäkinen & Seppänen, 2007). A structure that is fundamental, should one wish to conduct an empirical research regarding the BMs or just to differentiate one model from another. Much like the definition of BM, these variables are not exactly defined, nor perhaps should they. Most of the time the variables of the BM are set between the measurable inputs that the firm uses and the measurable outputs going out of the firm. However, even this is not a rule as BM concepts mapping out how firms generate value have also taken into consideration the synergies between the firm and its coopetition. As Malone et al. (2006, p. 5) stated: "there is no single right way to distinguish different types of business models. But some typologies are certainly better—or more useful—than others". This is true when considering the adaptability of a certain typology for empirical research. Nevertheless, several attempts to define these variables and to develop different classification systems have been made with interesting results. Definitions of variables and widely cited classification systems are presented below in chronological order.

Timmers (1998) conducted his research amid the dotcom bubble, trying to map out the connection between the traditional and digital markets, newly invented BMs, and emerging strategic marketing approaches. Paul Timmers (1998, p. 4) was among the earliest BM researchers to offer a definition for the concept, which consisted of three parts: "(1) An architecture for the product, service and information flows, including a description of the various business actors and their roles; and (2) a description of the potential benefits for the various business actors; and (3) a description of the sources of revenues". Couple years later Mahadevan (2000) argued that a BM is a unique blend of three critical concepts: (1) value stream, (2) logistical stream, and (3) revenue stream. First concept, the value stream describes the value proposition of the firm as well as the portal in e-business concept. Revenue stream explains the plan for securing the generation of revenue in the future. Lastly, the logistical stream describes the design of the supply chain for the business.

Amit and Zott (2001) took and organizational science approach and developed a value generating and boundary expanding BM activity system that was a rather different from the others taken on the BM research field or covered in this thesis. The four components or themes of their BM design included: (1) Novelty, (2) lock-in, (3) complementarities, and (4) efficiency. The first theme consists of three subthemes or activities: adoption of new activities (content), new ways of linking activities (structure), and new ways of governing the activities (governance). The second theme explains how BM can keep third parties attracted to the firm and participate to its BM. Lock-in theme includes activities such as: switching costs, or as network externalities that both originate from content, structure and/or governance of the BM. The third theme, complementarities represent an opportunity where bundling activities within the system provides more value than running separate activities. The fourth theme, efficiency includes activities that reduce transaction costs and therefore enable higher efficiency. (Zott & Amit, 2010).

Osterwalder and Pigneur (2002, p. 77) proposed an e-business framework, or ontology in their own words, with emphasis to four issues:" (1) [Product innovation] What business the company is in, the product innovation and the value proposition offered on the market. (2) [Customer relationship] Who the company's target customers are, how it delivers them the products, and how it builds a stronger relationships with them. (3) [Infrastructure management] How the company efficiently performs infrastructure or logistics issues, with whom, and as which kind of virtual enterprise. and finally, (4) [Financials] What is the revenue model (transaction, subscription/membership, advertising, commission, licensing) and the cost model (cost of goods sold, operating expenses for R&D, sales, and marketing, general and administrative)?" In their approach BM was the link connecting strategy and business processes, that is essential for achieving a clear communication between the implicated parties. On the same year Chesbrough and Rosenbloom (2002) stated that the BM should "(1) articulate the value proposition, (2) identify a market segment, (3) define the value chain structure, (4) assess the cost structure and (5) potential benefits, determine the firm's position within the value network and formulate the competitive strategy."

The definition by Shafer, Smith, and Linder (2005), that was mentioned in the earlier chapter, was devised based on four clusters of components. (1) First cluster was

labelled as strategic choices and included components, such as customer (target market and scope), value proposition, capabilities and or competencies, revenue and or pricing, competitors, output (offering), strategy, branding, differentiation, and mission. (2) The second cluster, labelled as value networks contained suppliers, customer information, customer relationship, information flows, and product and or service flows. (3) The third cluster named creating value included the resources and or assets, and processes and or activities. (4) The fourth and the last cluster, labelled as capturing value included firm's costs, financial aspects, and profit.

In a typology developed by Malone et al. (2006), BMs are distinguished along two dimensions, asset types and asset rights. *Asset types* include financial, physical, intangible, and human, while *rights sold* dimension includes creator, distributor, landlord and broker. The asset type dimension is rather intuitive, but the latter could use a little explaining. It is the classification of the type of legal rights are conferred to the buyer upon the completion of the transaction. For example, creator creates or transforms the asset and then sells the asset, whereas distributor only buys the asset and then sells it forward, sometimes rebranded. Landlord owns the asset and only sells a temporary right to use the asset. Broker matches the buyers and sellers. This results to matrix of 14 plausible BM types, since two of the 16 are illegal in most countries today* (see Figure 3). For an example, a physical-creator refers to what is called a manufacturer and human-landlord to a contractor. Few of the BMs are mentioned to include subclasses, such as financial landlord includes lenders and insurers, whereas intellectual landlord includes publishers, brand managers and attractors. It is possible for a single firm to deploy multiple BMs. The typology was then applied to classify over 10000 publicly traded firms on U.S stock market from 1998 to 2002, and later even more from 1997 to 2009 for a similar empirical study (Weill, Malone, & Apel, 2011). A factor analysis was also conducted, and the typology had a discriminant validity against the industry classification, a closest widely used typology.

	Financial	Physical	Intangible	Human
Creator	**Entrepreneur**	**Manufacturer**	**Inventor**	**Human Creator***
Distributor	**Financial Trader**	**Wholesaler/ Retailer**	**IP Trader**	**Human Distributor***
Landlord	**Financial Landlord**	**Physical Landlord**	**Intellectual Landlord**	**Contractor**
Broker	**Financial Broker**	**Physical Broker**	**IP Broker**	**HR Broker**

Figure 3. The sixteen business models (Malone, et al., 2006).

The popularity of the different BMs was reported by the distribution of firms and their sales revenues. Figure 4 demonstrates that a large majority of firms deal with physical assets and get most of the total revenues. The same figure shows us that majority of publicly listed firms are either creators or landlords and that the creators get roughly half of the total revenues.

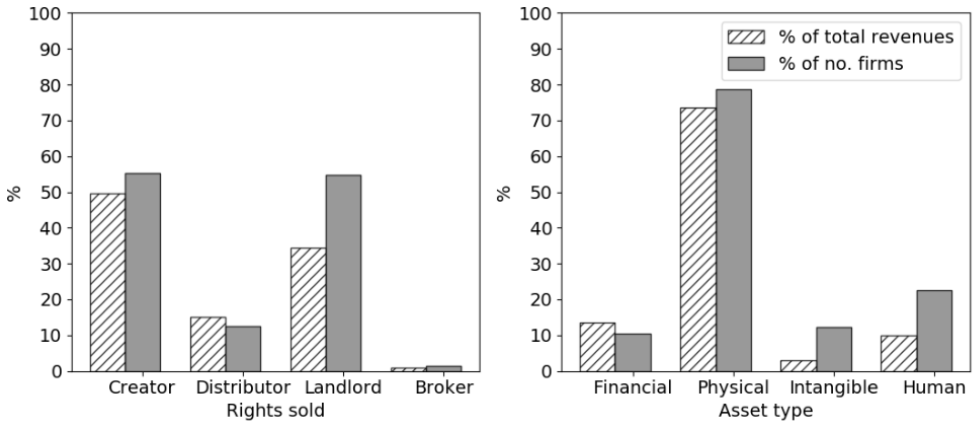

Figure 4. Distribution of firms and revenue across the two dimensions in 2002 (Malone, et al., 2006)[4].

In order to implement BM as a management tool Johnson, Christensen, and Kagermann (2008) proposed a BM definition that consists of four interlocking elements that create and deliver value. (1) The first and the central element is *customer value proposition*, which includes concepts such as defining the target customer and understanding the fundamental problem in each situation that needs to be solved and designing the offering. (2) The second element is the *profit formula*, including concepts such as revenue model, cost structure, margin model and resource velocity.

[4] Data are from the mentioned source; figure was made by the author.

Giving answers to the following questions: “How much money can be made?”, “How costs are allocated?”, “How much each transaction should net to achieve desired profit levels?” and “How quickly resources need to be used to support target volume?”, respectively. (3) The third element is the *key resources*, which are differentiated from the generic resources based on whether the resource plays a part in the value creation process. Such resources could include assets both tangible and intangible: people, technology, products, facilities, channels, and brand. (4) The fourth element is the *key processes*. According to Johnson, Christensen, and Kagermann (2008), every successful company has operational and managerial processes that enable the repeatable and scalable value delivery. These processes could include training, research and development, manufacturing, planning, and budgeting. But also, the rules, metrics, and norms of the firm.

In 2010 Osterwalder and Pigneur published a BM ontology called a BM canvas. The BM canvas was developed for the purpose of communicating BM in a manner that everyone involved in the company decision making and development would understand. It is a widely used among business practitioners, BM researchers and consultants, partially due its nontechnical structure, that is easy to communicate and to understand. As seen in Figure 5. The BM Canvas .Figure 5, the BM canvas consists of nine components. The placement of the components on the canvas is not arbitrary. Value proposition component in the middle describes the product, whereas the firm’s infrastructure on the left is described by the cluster of key partners, activities, and resources. The three components on the right side: customer relationships, customer segments and channels describe the customer side. On the bottom row the two core financial components are cost structure and revenue streams, on which rest of the components are placed. The BM canvas has gained attention especially among BMI researchers, as a Google Scholar query research reveals that 14.36% of the publications including term “business model innovation” included also the term “business model canvas” in 2019.

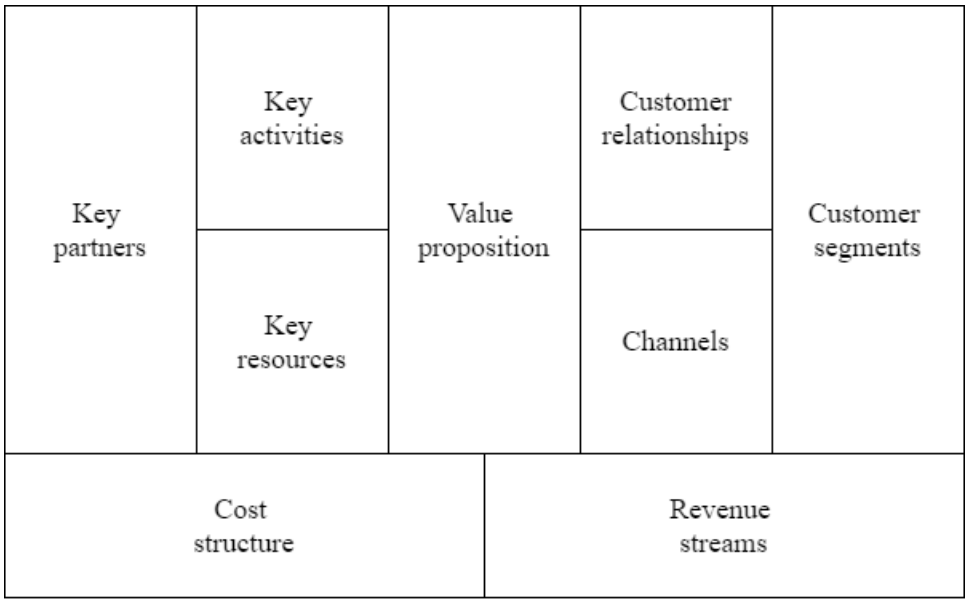

Figure 5. The BM Canvas (Osterwalder & Pigneur, 2010).

While developing a strategic management tool based on the concept of BM and the Penrosian idea of RBV, Demil and Lecocq (2010) described BM by using three core components: (1) Resources and competences, (2) organizational structure, and (3) value proposition. The first component describes all resources from external markets or developed within the firm, while the competences refer to the individual and collective abilities and knowledge that the management develops. The second component describes the firm's activities and relations with other organizations that can be used to combine and exploit the available resources. The third component encompasses the target and content of transactions with customers, including the resources deployed to generate an offer.

As mentioned in the previous chapter, Gassmann, Frankenberger and Csik (2014) developed a descriptive BM framework, similar to that of Osterwalder's and Pigneur's earlier ontology (2002), based on answers to four questions (see Figure 6Figure 6): (1) Who is your target customer? (2) What do you offer to the customer? (3) How is the value proposition created? And finally, (4) why does the BM generate profit? They analyzed 250 BMs based on these four dimensions and created a value generation and capture orientated taxonomy of 55 BM patterns in which 90% of the currently existing BMs can be broken in to. As an example, a model called Cash Machine (number 6 of 55) is used by companies such as Dell, Amazon, and PayPal. The model is based on

the consumer's up-front payment, which allows increased liquidity for the firm. Another example of a BM pattern is Ingredient Branding (number 22 of 55), practiced by firms such as Bosch, Carl Zeiss, Shimano, and Intel. This pattern describes the strategy when a third party includes firms branded ingredient to their product to increase its attractiveness. In this taxonomy, a firm can leverage multiple BM patterns. A similar value driver centric BM pattern recognition framework was developed by Taran et al. couple of years later (2016), titled as a Five-V framework. This system included 71 BM patterns, based on five value driver components that are weighted differently between the different firm configurations: (1) value proposition, (2) value segment, (3) value configuration, (4) value network, and (5) value capture.

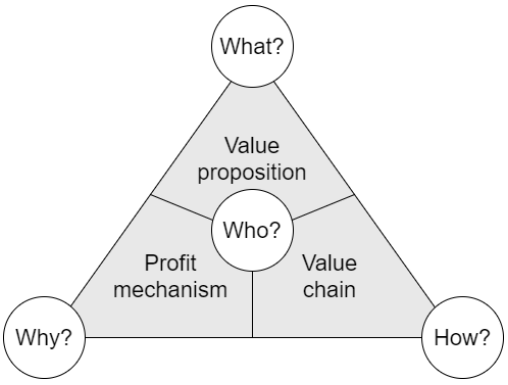

Figure 6. The "magic triangle" (Gassmann, Frankenberger and Csik, 2014)[5].

In an effort to connect BM concept with environmental sustainability, Abdelkafi and Täuscher (2016) use a BM framework that consists of three components: (1) value proposition, (2) value creation that includes value delivery, and (3) value capture. Their conceptualization is similar to the four-part framework by Boons and Lüdeke-Freund (2013 via Abdelkafi & Täuscher, 2016).

2.1.3 Financial reporting practices and business models

This subchapter goes through how financial and business reporting practices perceive the BM concept, within European Union (EU), United Kingdom (UK) and United

[5] Adaptation of the original figure.

States of America (US). In addition, a branch of BM research written from accounting perspective is examined, because of its relevance to performative approach to business modelling.

BMs have caught the attention of Financial Reporting Council (FRC), an independent regulator that plays a significant role in the supervision and deployment of corporate governance standards in the United Kingdom. Due to an increasing interest among investors towards how boards of directors in private firms manage risk and assess their long-term viability after the 2008 financial crisis, the listed companies have been required to disclose their BM as a part of the annual report since 2013 by the UK Strategic Report Regulations. Before becoming a legal requirement, the BM was to be reported on a comply or explain basis under the UK Corporate Governance Code since 2010. In 2016 the Financial Reporting Lab (henceforth, the Lab), founded by the FRC to improve the effectiveness of financial reporting, laid out a report on BM reporting including recommendations on how the BM should be reported. The report was based on investor and company preferences revealed and recorded during individual and round table meetings with representatives of firms, institutional investors, as well as with private investor associations. Naturally, the recommendations reported by the Lab align with the official Guidance on the Strategic Report. While there are no exact rules on what it should include nor an exact definition for the BM, the report states that the most of the investors want the firm to disclose the following variables or attributes as a part of their BM (Financial Reporting Lab, 2016): (1) what the firm does and where it sits in the value chain, (2) key divisions including their respective contributions and legal structures, (3) key markets and market segments, (4) key inputs (assets and liabilities, relationships and resources) and how they are maintained and/or enhanced, (5) key revenue and profit drivers, (6) value created for other stakeholders that supports economic value generation, (7) statistics to indicate relative importance of elements. The report states that in addition many investors require: (8) direct threats and (9) market share. In addition, the Lab report includes other attributes that or elements that some investors want: (10) firm culture and values, (11) SWOT analysis, (12) purpose, (13) investment plans, (14) how the BM is likely to evolve, (15) cash flow, (16) capital and assets allocated to business, (17) ROE (Return on Equity), (18) ROCE (Return on Capital Employed), and (19) ROA (Return on Assets). The idea of BM in the annual report is to lay a foundation for the financial reporting, to paint a clear picture of the

firm's operations and what differentiates it from the other businesses and to offer a point of reference where investors can return to for comparison while going through the rest of the reporting. (Financial Reporting Lab, 2016). There are few things worth mentioning regarding BM reporting in the UK. It is interesting to note that, the in the LAB's report BM is considered as a separate concept from strategy: whereas BM is expected to explain key elements and drivers of the firm, the strategy segment of the report is to explain how the key drivers are maintained or developed. Overall, the BM appears to be an open format story telling device, following the definition laid out by e.g. Magretta (2002), striving to explain what makes the business profitable when compared to other firms by expressing the positioning, network effects and synergies, the source of competitive advantage and the different key inputs that are leveraged for producing value. In a sense, the ambiguity of the BM term is beneficial for the purpose of fulfilling the varying investor preferences regarding the reporting. Also, the wide array of expectations regarding the BM attributes messages that at least the UK investors perceive BM as more than just an add-on to strategy or as another term for value creation logic.

The EU set out Directive 2014/95/EU (European Commission, 2020), also known as the Non-Financial Reporting Directive (NFRD) in October 2014. It was applied as a law in the member countries in December 2014 and the firms applicable had to begin reporting in 2018, regarding the financial year 2017. The NFRD applies to all large companies listed on stock exchange as well as banks, and insurance companies with more than 500 employees. As stated in the NFRD Article 19a the firms (The European Parliament and the Council of the European Union, 2014): "shall include in the management report a non-financial statement containing information to the extent necessary for an understanding of the undertaking's development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters, including: (a) a brief description of the undertaking's business model; (b) a description of the policies pursued by the undertaking in relation to those matters, including due diligence processes implemented; (c) the outcome of those policies; (d) the principal risks related to those matters linked to the undertaking's operations including, where relevant and proportionate, its business relationships, products or services which are likely to cause adverse impacts in those areas, and how the undertaking manages those

risks; (e) non-financial key performance indicators (KPIs) relevant to the particular business." However, according to the official guidelines on NFRD and specifically BM reporting, even the *brief description of the undertaking's BM* concerns solely on environmental impact of the firm (European Commission, 2019), such as disclosing how the firm's operations are depended on natural resources or how the firm contributes to climate change through its actions. The official guidelines make a clear distinction between strategy and BM. This is not the only instance that the term BM is used in EU communications or legislation. In fact, a search query "business model" on EUR-lex, a public access portal for the EU legislation, offers 26 regulations and 16 directives as well as more than 1600 other recorded documents. [6]

In the US, the term BM is adapted in initial public offering (hence IPO) documentation widely, even though the author of this thesis did not find any legal obligation to do so. As a rule, when an IPO-planning firm is preparing their registration filing form (Form S-1) on Securities and Exchange Commission's (SEC) Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system, they tend to include a description of their BM to their Investment Prospectus information (Loughran & McDonald, 2013). This is also easily attested by going through the SECs filings of S-1 / IPO documents wherefrom multiple examples have gained a lot of media exposure, such as the S-1 forms of Google, Facebook, and Netflix that all utilized the BM concept in their documentation (SEC, 2021).

At the change of the millennium an emerging importance of intellectual capital (IC) in the new market sparked a long-lasting debate on the accounting academia regarding how IC and non-financial aspects of the new market should be disclosed in the financial and business reporting. As a result of this debate, a concept that refers to disclosing non-financial information, known as a narrative reporting, has been part of the IASB[7] Framework for the Preparation and Presentation of Financial Statement, since 2001 (IASB, 2001, via Beattie & Smith, 2013) and in 2006 the IC was

[6] However, as far as the author of this thesis is aware, the NFRD is the only case where the usage of BM is actively required from the European business practitioners and that nowhere in the documents does the any EU affiliated institution give a definition for the term.
[7] International Accounting Standards Board is an independent arm of International Financial Reporting Standards (IFRS) foundation, that is set out to develop the IFRS standards.

documented as the most important capital type for the new knowledge economy, that is dominated by the service industries, by OECD and the World Bank (OECD, 2006; World Bank, 2006, via Beattie & Smith, 2013). However, after the financial crisis of 2008 there has been a growing concern towards annual reports becoming too extensive and complicated, resulting to calls for two conflicting courses of action: first, for simplifying the reporting by removing the immaterial and less important disclosures, or second, designing a new reporting system that encompasses the measurements of the new market (Beattie & Smith, 2013). Already in 2005, the Japanese Ministry of Economy, Trade (METI) and Industry proposed a narrative reporting framework that included the description of intangible resources as well as the connected capabilities and the quality of the competitive advantage that using the intangibles enables (METI, 2005, via Beattie & Smith, 2013).

The International Integrated Reporting Council (IIRC), a coalition of investors, regulators, standard setters, companies, accounting professionals, academia, and NGOs, is trying to fill the gaps that the traditional business reporting is perceived to have, by introducing a reporting approach called integrated reporting. Compared to a status quo of reporting, they emphasize the importance of strategy, drivers of value creation and intellectual capital as well as the cohesion between different elements of the reporting. BM is a central element of the integrated reporting and refreshingly they do offer a definition for the BM (IIRC, 2013, p. 25): “An organization’s business model is its system of transforming inputs, through its business activities, into outputs and outcomes that aims to fulfil the organization’s strategic purposes and create value over the short, medium and long term.” IIRC, states that the description of BM should include the key: inputs, business activities, outputs, and outcomes. This interpretation is similar to that of some BM researchers mentioned in this thesis e.g., Amit and Zott (2001), Teece (2010), and Wirtz, Pistoia, Ullrich, and Göttel (2016) and Lanzolla and Markides (2020).

As mentioned, the accounting field initially focused their efforts on the new market in figuring out the question of how to effectively report the IC as well as value creation albeit to a lesser degree (Nielsen & Roslender, 2015). The journal article in The British Accounting Review by Beattie and Smith (2013), observed that the accounting literature at the time had not yet built ties with then recent strategy or BM publications

and proposed that a bigger emphasis in the accounting research was put on the relationship between IC, value creation and BM. Few years later Nielsen and Roslender (2015) wrote an article for the same journal as a response for requests by major accounting standard setting bodies International Accounting Standards Board (IASB) and European Financial Reporting Advisory Group (EFRAG) to inspect the possibilities that BMs have to offer for business reporting, first by discussing the BM concept in more detailed manner and later by reviewing promising example BM frameworks. Initially it seems that the business and finance reporting could share the same interests regarding BMs and value creation. As the Nielsen and Roslender (2015) pointed out, there exists a tension between business reporting and BM research, where the former is mainly focused on representing the capture of the shareholder value, and the latter are concentrated on value creation, delivery, and capture. Regardless of this they also state that the appeal of BM concept for business reporting resides in its potential to offer a framework consisting of multitude of factors that act as prerequisites for the shareholder value. When we compare this statement to the preferences of the UK investors mentioned earlier, the perceived shareholder value seems to comprise of as many parts as any suggested BM framework suggested so far. While the choice of variables is important for having a fitting BM for financial reporting and predicting value creating and capturing capabilities of the firm, still the most important factor is the interconnectedness, or synergies, between the chosen variables. In addition to the work of Nielsen and Roslender this emphasis on the connections between the elements can be also seen in the IIRC's publication (2013), to which they cite too. All in all, they see BM thinking as (Nielsen & Roslender, 2015, p. 27): "an approach capable of delivering the information relevant to the needs of a growing number of users", a scope and scale of which would surpass the one projected earlier for the business and financial reporting, but they also are somewhat reserved on how willingly the business and finance reporting fields would welcome the managerial accounting, or BM-infused thinking into their practices.

2.2 Business model innovation

In practice, BMs are never static, nor do they appear from the thin air but are initially designed for the purpose, consciously or unconsciously and then adapted to the changes in the business environment, especially in the long run. The process of

adjusting BM or finding a new model, is referred with the term business model innovation (BMI). The topic has caught an attention to such a scale that it is here, and elsewhere, considered as a subbranch of BM research. Nevertheless, as with the concept of BM, the BMI does not have a widely accepted definition. As shown in the Figure 1, the interest towards BMI has been steadily increasing since 2003, when Mitchell and Coles first discussed it explicitly in their Journal of Business Strategy article, the number of publications including BMI has been growing by 31% on average per annum.

In their BMI literature review of 150 scholarly publications, Foss and Saebi (2017) state that the large extent of the literature is focused either on facilitators of BMI as an organizational process or for identifying new and innovative BMs. Based on this finding the authors first conclude that the BMI construct is used mainly as a classification tool and then criticize that most of the research does not strive to develop a distinct BMI theory. As a part of the framework that the authors are proposing, they (Foss & Saebi, 2017, p. 2) define BMI as: “designed, novel, nontrivial changes to the key elements of a firm’s business model and/or the architecture linking these elements”.

Heikkilä, Bouwman and Heikkilä (2018) performed 11 case studies to draw out a picture on how specific strategic goals of SME firms relate to BMI paths taken as firms act to improve their businesses. The authors used a BM canvas ontology developed by Osterwalder and Pigneur (2010) due its simplicity and wide usage among business practitioners. The results found evidence that based on the distinct three strategic goals: to start a new business, to grow and to improve profitability, the firms chose to develop different BM components in varying order. Specifically, firms that sought for growth started their process of change on the consumer side components (right side of Figure 5), whereas the profitability focused businesses started from the infrastructure components (left side of Figure 5). Firms that aimed for starting a new business were shown to process the different components in a cyclical fashion while continuously testing the viability of the BM. Overall the findings indicated that all three paths lead to a gradual improvement in several BM canvas components.

2.2.1 Organizational innovation and open innovation

BMI is similar to an older framework and more extensive line of research termed as an organizational innovation (see Figure 7), that has its roots in the idea of Schumpeter's creative destruction (1942/2008). Organizational innovation has no generally accepted definition. Nevertheless, Lam (2004, p. 3) draws from earlier research to draft a general definition for organizational innovation: "In a general sense, the term 'organizational innovation' refers to the creation or adoption of an idea or behaviour new to the organization" (Daft, 1978 via Lam, 2004; Damanpour and Evan, 1984 via Lam, 2004; Damanpour, 1996 via Lam 2004). A difference between the terms is subtle, yet Foss and Saebi (2017) differentiate the two by stating that the BMI is an original, newer, and more holistic form of organizational innovation that guarantees theory building, operationalization, and testing.

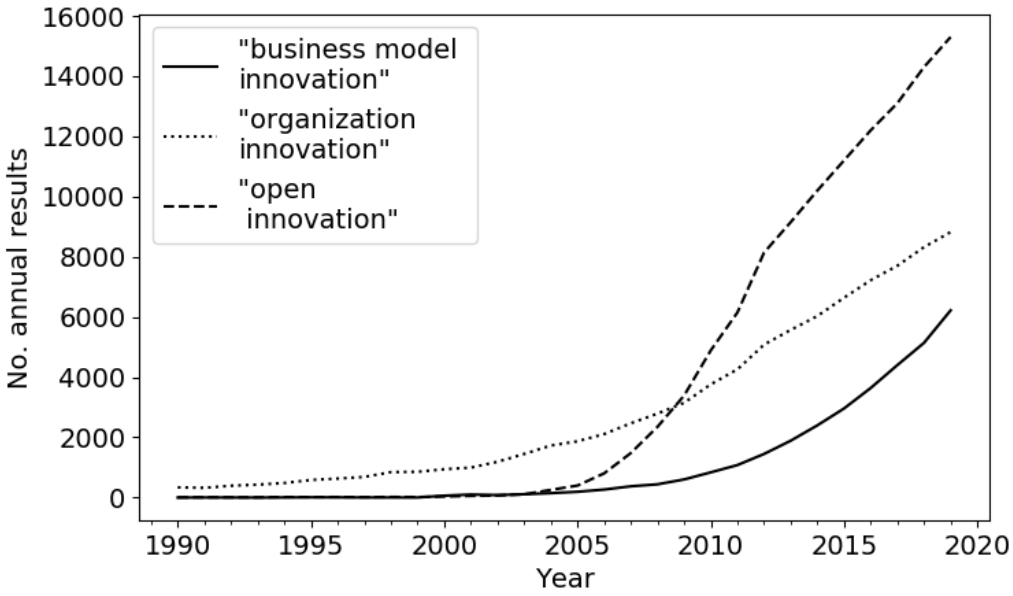

Figure 7. Number of annual publications indexed in Google Scholar.

Another BMI and organizational innovation related term, open innovation, appeared nearly at the same time with BMI but has proven to be far more popular among the academia than the previous terms (see Figure 7). While the open innovation originates from Henry W. Chesbrough's book from 2003, the benefits and driving factors of openness have been argued (Trott & Hartmann, 2009) to originate as far back as 1960s

within the management literature. The scope of the open innovation concept is larger than of BMI or organizational innovation, as it generally means that valuable ideas can both come and enter the market from either inside or outside of the company. Nevertheless, open innovation ties in with BM framework by linking decisions of what to supply in-house and what to outsource to economic outcomes (Chesbrough, 2003).

2.2.2 Performance implications of business model innovation

Despite being a relatively young concept, the BMI has shown promise as a key source of sustained value creation (IBM Global Business Services, 2006 via Foss & Saebi, 2017), even surpassing new products and services as a source of future competitive advantage (Economist Intelligence Unit, 2005 via Foss & Saebi, 2017). Linking to BM research, innovative BMs have been found to influence positively to entrepreneurial firm's performance, "even under varying environmental regimes" (Zott & Amit, 2007). Also, it has been shown that larger firms that actively practice BMI, enjoy positive performance effects (Cucculelli & Bettinelli, 2015 via Foss & Saebi, 2017) and that the firms that strategically emphasize both BMI and replication of their own successful innovated BMs enjoy a higher average value of growth than those firms that empathize only one of the two aspects (Aspara, Hietanen, & Tikkanen, 2010). A further proof of this concept is offered by Johnson (2010), who argued that more than half of the 26 firms that were founded since 1984 and managed to enter the *Fortune 500* list from 1997 to 2007, were enabled to do so because of BMI. These twenty-six firms included names such as Amazon, Google, eBay, and Starbucks. Were the same analysis made during the time of writing this thesis, it would certainly include Facebook as well, that had its IPO in 2012 and entered the list one year later.

2.3 Defining business model for economics

This study alone includes more than a dozen of different definitions for BM, ranging from many different scientific viewpoints, but there are numerous others that were left excluded, and the number is constantly increasing. Offering yet another exact definition for the term and dictating what variables should be included in the BM would not help to tie the BM concept with the economic theory but rather have an opposite effect. Instead of antagonistic and exclusive efforts, conciliatory, and

inclusive efforts are required. When considering the concept from the point of view of economic theory, based on the BM literature and the reflection of the concept in many instances, the author of this thesis is led to a following working definition:

> Business model is an umbrella term for the purposeful simplification and division of a business into essential variables, based on the intended purpose of use of the model.

As many central variables of BM theories, such as value creation and competitive advantage can be seen to originate externally and internally to the firm and since multitude of variables can originate from tangible and intangible assets as well as from the firms' conduct or transactions, a term business in the definition can be understood as a more than just a sum of its physical parts. This way, instead of claiming the term for a particular interest group, the suggested definition would allow a simultaneous and nonconflicting usage of the term between the business practitioners and BM researchers working under different scientific fields alike. Such a conciliatory approach supports the argument of Doganova and Eyquem-Renault (2009) that BMs have a double function as narrative and calculative devices.

If the entirety of BM research wants to continue to thrive in quantity and develop in quality, it would be beneficial to agree to disagree in the exact definitions and reflect that change in their naming practices. There are at least three approaches for the naming, that would be both more beneficial and practical than the current approach. First would be to specify the BM concept based on the variables that are used in the model in question. For example, a BM that is based on two dimensions of transaction types and rights transferred (concept suggested by Malone et al.), could be called transaction/rights matrix BM. Second approach would be to name the specific BM concepts according to their intended usage. An example of such naming practice would be to call BM that is used for researching a connection between startup firm performance and the BMs that they are utilizing, a startup performance model. While such a naming practice would undoubtedly end up grouping multiple BM approaches under the same term, it would still make the concepts more easily distinguishable from BMs used for other purposes. A third approach would be to use the name(s) of the researcher(s) to differentiate between the different BM concepts. Also, a naming

practice based on three meta-level interpretations of BM (covered with more detail in the next subchapter) has been suggested by Massa, Tucci and Afuah (2017). Regardless of which approach would be utilized, a more descriptive but relatively concise naming practice in addition with the idea of an umbrella or a blanket term, could potentially make the BM research field more accessible to new researchers, support the much-needed theory building and reduce the cannibalization of the BM term.

2.4 Business models as economic models

As suggested earlier, a change in naming practice for a more accurate approach would be welcome change for the field of BM research. Still giving different BM concepts, more accurate names, does only that and the diversity of meaning remains. However, that diversity may in fact be beneficial for the BM research. Shafer, Smith and Linder identified 42 different BM components that the different researchers had proposed (2005) but as we can see from the quantitative literature analysis (see Figure 1) the number of annual publications has since grown threefold. 12 years later Peric, Durkin and Vitezic (2017) identified 387 different BM elements from 108 publications that directly referred the components of the BM. The most frequently cited components of those 387 elements revealed in the research were: the value proposition, customers, products and services, resources, value creation, value capture, revenues, technology, processes, and partners of the firm. Although the study was extensive, there must be numerous of other suggested elements should one collect them all together. Most of these components are complex and therefore describing them requires a further specification and great amount of detail. For example, a component called *target market* (used by e.g., Magretta, 2002 and Chesbrough, 2003), could include a description of consumer demographics such as age, sex, income, geographical location, ethnicity etc. Should one wish to model the firm based on these 387 components, the sheer number of possible variables and the cumulative data contained for a single firm is enormous. However, a purposeful mapping of every detail of business is kin of constructing an accurate simulation rather than a good BM and while we may or may not already possess the computing power for such simulations, collecting the data and modelling the simulation for an entire firm seems still far from feasible. Not to mention that we do not need a complete simulation of a company to

get answers to many questions at hand. It could also be said that these questions are what define which components are relevant to the model and which components of the business differentiate one firm from another. In this light, an ideal BM is just complex enough to solve the problem that needs solving, and measures only those attributes that differ from *similar* firms. Similarity of firms is also essential, as one cannot expect SMEs of one industry in one country to operate in a similar environment and same rules with multinational firm operating on a different industry. This applies also to the differences between public and private organizations. The principle of simplicity and relevancy, albeit regarding economic models, is well summarized by Varian in his textbook *Intermediate Microeconomics: A Modern Approach* (2014, pp. 1-2):

> "By a model we mean a simplified representation of reality. The emphasis here is on the word "simple." Think about how useless a map on a one-to-one scale would be. The same is true of an economic model that attempts to describe every aspect of reality. A model's power stems from the elimination of irrelevant detail, which allows the economist to focus on the essential features of the economic reality he or she is attempting to understand."

Before moving further with reflecting BM concept through economic model theory, it is necessary to look first at the history of modelling in economics. While present in natural sciences for eons, in economics the effective usage of the models and modelling started with the interwar period econometrics movement, which strove to develop and connect mathematical and statistical approaches to economics (Morgan, 2008). From 1950's onward the two separate fields of mathematical economists and econometricians developed, both of which kept modelling as a fundamental instrument of their scientific practices. In the former field, the models were thought as mathematical objects, whereas the latter considered them as econometric objects, involving both the mathematical and statistical properties (Morgan, 2008). Since those times, models have become vital instrument for economics.

In the New Palgrave Dictionary of Economics, Morgan (2008) states that the philosophic analysis of the development of the modelling and the statements of the founders of modelling affirm to three different functions for the modelling: (1) fitting

theories into the real world, (2) theorizing and (3) as instruments of investigation. The first two functions, fitting theories in the real world and theorizing can be seen as a legacy of the dichotomy between theoretical economics and applied economics, where economists would craft a theory and econometricians would use statistics for model analysis and to test the theory. The third function can be seen in use in both earlier mentioned camps, as the dichotomy is imperfect. One reason for this imperfection is the near evident creative element of an econometrician's work, concerning fitting the often-abstract mathematical models to a statistical data of the real world. This on the other hand is caused partially due the fact that the formal practice of mathematical modelling has not been designed nor standardized for the purpose of econometric analysis (Morgan, 2008). An imperfection which can be observed regarding the existing BM theory, when the different BM concepts are applied to econometric research, the researchers must often figure out a way to quantify the qualitative variables or otherwise improvise with the model structure. This can be observed in action in the next chapter.

In their thorough analysis of the BM research field, Massa, Tucci and Afuah (2017) suggested three meta-level interpretations for the BM concept: (1) BMs as attributes of real firms, (2) the BM as a cognitive/linguistic schema and (3) BMs as formal conceptual representations/descriptions. While BM as a concept that describes attributes of a firm by depicting value creating or capturing activities (1), can provide a tool for econometric analysis for example regarding the firm performance, it is problematic regarding the lack of effort in the actual practice of formal modelling. Also, real world firms can deploy multiple of such BMs simultaneously, a topic that has been covered widely in strategic branch of the BM research but is excluded from this thesis. All things considered, it should be evaluated whether such interpretations should be called BMs or rather as something akin to *value creation logic*. The second interpretation, BM as a cognitive/linguistic schema (2), sees BM as an ideal image of a real system or established belief that the firm managers use as a basis for their decision making. While BM constructs following this interpretation demonstrate a core logic often applicable to econometric research, such BMs leave perhaps too much room for interpretation. BM concept as a formal conceptual representation/description (3), is the most applicable with economic theory, because the formal conceptual presentation approach often utilizes the modelling practices, core logic or

mathematical tools developed for the economics, making it easier to leverage and build on for econometric research and economic theorizing.

The existing theoretical literature regarding good business modelling practices is thin at best, however a lot more has been published regarding the economic modelling. While BM and economic models are considered as two separate things, the researchers who claim so tend to uphold and often promote a more specific definition for BM and interpretate BM by following the first or the second patterns mentioned in the previous paragraph. If we look both the BM as a formal conceptual representation and economic models as what they are: models that describe economic systems, the only difference is the object of the modelling. Simply put, all BMs are economic models (i.e., BMs are a subset of economic models). However, all economic models are not BMs (see Figure 8 for illustration). Supporting this idea, as DaSilva and Trkman (2014) have suggested that we can see that in the past before the emergence of BM term the economists used economic model to describe to what would now be considered as a BM. As an example, Hansen and Wernerfelt (1989) used the term economic model for explaining the firm performance. Keeping this suggestion in mind, perhaps we can and should leverage the significant and currently existing theoretical efforts for economic modelling practices for the betterment and more enlightened analysis of the BM theory. Nevertheless, it should be noted that the two do not exist in separate vacuums and even without vocally adapting the economic modelling practices, the BM research has benefitted from it. It is clearly visible that the economic modelling theory, especially regarding empirical or econometric models have had a significant influence on the BM research. While the author of this publication found no proof of the opposite effect, it could well exist.

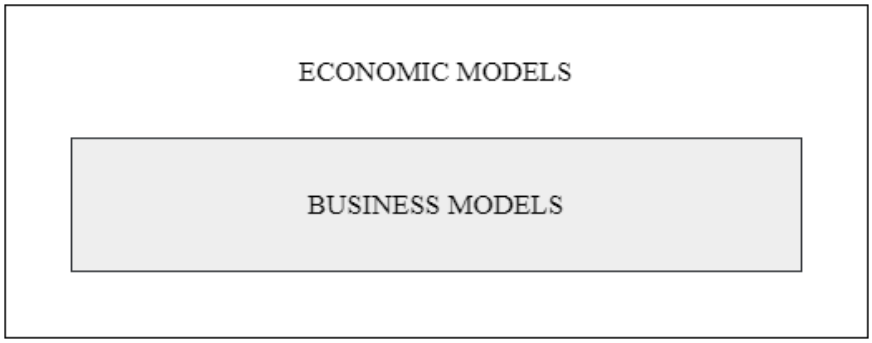

Figure 8. Business models are a subset of economic models.

According to Gabaix and Laibson (2008) there are seven key properties that are to varying degree found in all successful and useful economic models. Varying in the sense, that rarely even an exemplary model possesses them all. These key properties are: (1) parsimony, (2) tractability, (3) conceptual insightfulness, (4) generalizability, (5) falsifiability, (6) empirical consistency, and (7) predictive precision. The first four are widely accepted among the economists whereas the latter three less so. The first property (1), *parsimony*, refers to the relative sparsity of special assumptions and therefore to the sparsity of researcher's degrees of freedom. The less there are special assumptions, the less room is left for conscious or subconscious manipulation of the model and over-fitting the model. Over-fitting refers to a situation where the model is set in a way that it works very well in the sample but fails to produce accurate out-of-sample predictions. The second key property (2), *tractability*, refers to the degree of ease with which the methodology used in the model can be analyzed. A model with maximum tractability, is such that can be solved with pen and paper. The other extreme, a model with minimum tractability is not practically solvable even with computers or would take too many years to compute. The third property (3), *conceptual insightfulness* of a model, distinguishes whether the model can reveal fundamental properties of economic behaviour or systems. The fourth model property (4), *generalizability*, refers to the range of situations in which the model can be applied. The fifth key property (5), *falsifiability*, means that the model must make nontrivial predictions that can be in principle empirically falsified. Otherwise, the model cannot be evaluated empirically. The sixth model property (6), *empirical consistency*, measures whether the model works consistently with data and has not been empirically falsified. At minimum, the empirically consistent model would provide weak predictions that are empirically verified, at the maximum the model would provide

precise empirically verified predictions. The seventh property (7), *predictive precision* of the model, describes whether the model makes precise predictions. If model is wrong and produces precise predictions, it can be easily falsified with even small amounts of data. However, some models with predictive precision are useful even when they are empirically inaccurate. As a general principle, models that provide strong predictions but are approximately accurate are more useful than models that provide weak predictions with exact accuracy. For example, a policymaker values more a macroeconomic model that tries to predict exactly when the next recession will occur than a model that will state with a hundred percent accuracy that the recession will hit within a decade. (Gabaix & Laibson, 2008).

While the key principles mentioned above are generally agreed upon, there are no commonly held exact scientific rules on how economic models should be constructed and used (Morgan, 2008). Rather, the rules on what makes a good model are related to specific subtypes of models. The economic models can be divided in separate types, as an example, by (1) the methodology, (2) the variables used and (3) the intended purpose of the model. These prior subtypes (1) include but probably are not limited to: mathematical models, visual models, empirical models, and simulation models (Evans, 1997). The mathematical models are governed by the calculus and algebra and act the foundation for the rest of the model types. Exception from the mathematical basis are some visual models that are only diagrammatic, that only aim to visualize general economic concepts. However, most of the visual models are instruments of expression for mathematical models. Empirical models are largely based on mathematical models but are also deeply involved with statistics. Nowadays, perhaps a more fitting term than statistics, would be a data science, which according to Cambridge dictionary (Cambridge University Press, 2020) definition refers to the: “the use of scientific methods to obtain useful information from computer data, especially large amounts of data.”, the scientific methodology includes but is not limited to mathematics, statistics, computer science, domain knowledge and information science. The second subtypes (2) include, as an example: stochastic or non-stochastic models; discrete or continuous choice models. The last subtype, groups the models by the intended function of the model. For example: qualitative or quantitative, equilibrium, partial equilibrium, and non-equilibrium models.

To sum up the intellectual exercise of sketching an ideal BM concept for economics, we can use the famous George Box's maxim (Box, 1979, p. 202): "All models are wrong but some are useful". BM concepts are undoubtedly numerous but so are the uses. As observed by Massa, Tucci and Afuah (2017, p. 75): "The concept has helped scholars and managers articulate and explore intellectually interesting questions in diverse fields." In the next chapter, we can see that the current BM concepts have proven themselves useful as they produce statistically significant and consistent results when utilized in econometric analysis, suggesting that the modelling of the firms has been successful.

3 BUSINESS MODELS IN EMPIRICAL RESEARCH

Despite the high quantity of articles that include the concept of BM, the number of empirical studies utilizing the term has remained relatively small. This notion is supported by the database analysis conducted by Wirtz, Pistoia, Ullrich and Göttel (2016), that covered all the publications including the term 'business model' in title or abstract in EBSCO database from 1965 until 2013. Analysis revealed that only 3.9% of the peer-reviewed publications included multivariate analysis, 16% were case studies and the rest were purely conceptual.

In this chapter seven research papers are reviewed to provide a general overview on how BM concept has been applied for empirical research. While the foci of the literature reviews may vary based on the research question, the goal is to answer at least the following five questions:

1) What BM constructs do the researchers refer to and how they are interpreted?
2) What hypotheses do the BM researchers have?
3) What metrics are applied in the research?
4) What empirical methodology is implemented?
5) What implications do the results have?

3.1 The two-dimensional business model framework and financial performance implications on publicly listed US companies

The two-dimensional BM framework of 14 plausible BMs developed by Malone, et al. (2006) mentioned in the previous chapter was applied to classify all 10 970 publicly traded firms on U.S stock market from 1998 to 2002.

To figure out whether the BMs held financial performance implications, one of six financial performance measurements was held as a dependent variable and regressed on the 14 BMs. Specifically, these financial performance measures included (1) Tobin's Q (Abel & Blanchard, 1986) and (2) Fama and French's factor-risk alpha for measuring abnormal stock return (Carhart, 1997); Fama & French, 1993) for market value and growth. (3) Return on invested capital and (4) return on assets (Mcgahan &

Porter, 1997) for measuring profitability. Finally, the two, (5) operating cash flow on assets and (6) cash flow margin of sales measurements, were used to measure operating efficiency (Healy, Palepu, & Ruback, 1992). Control regressors included a lagged value of the performance measure used in each model, a binary variable on whether the firm is in S&P 500, log assets, log firm age, and the Herfindahl index for dealing with concentration of BMs within individual firms. The lagged value of the performance measure was used to deal with potential endogeneity issue, where firms would change their BMs based on firm performance. The S&P 500, log assets and log firm age, were chosen because of their status as standard control variables for regressions on performance (Gompers, et al., 2003 via Malone, et al., 2006).

The finding was, that some BMs perform better than others. Entrepreneur, manufacturer, physical landlord, physical broker, and contractor have significantly higher cashflow on assets, whereas for HR broker, they are significantly lower. Physical brokers had superior Fama and French's factor-risk alpha (or abnormal stock return), return on invested capital and return on assets compared to wholesaler/retailer, while entrepreneurs had significantly lower Fama and French's factor-risk alpha. The results were statistically and economically significant.

3.2 The two-dimensional business model framework and US public stock market valuation implications

On a study conducted five years later, Weil, Malone and Apel (2011) used the same taxonomy and dataset of over 10 000 publicly listed US companies, but this time to inspect whether BM held stock market valuation implications.

The revenues generated by each company in the dataset were measured and assigned to corresponding BMs, following the logic that one firm can utilize multiple BMs simultaneously. These individual values were then aggregated into 14 indexes and compared against the stock market returns from 1997 to 2009. The stock market return was measured as the change in stock prices plus dividends.

The results showed that investors had been specifically favoring two types of BMs: first, BMs that focused on licensing intellectual property, such as Walt Disney, and

second, highly innovative manufacturers, such as Apple (Weill, Malone, & Apel, 2011). In the Disney's case, the company had leveraged the sentiment of the investors and shifted from one of the least valued BM *physical landlord* into second highest valued *IP landlord*. The least valued BMs was *financial landlord* followed by the *physical landlord*. The rest of the BMs formed a cluster with significantly less variance in stock market returns.

3.3 The novelty/efficiency centric business model construct and performance indications on publicly listed entrepreneurial firms

Zott and Amit (2007) based their research on the shift in perspective in organization theory literature regarding IT investments being the enabler of boundary-spanning organizational design, instead of the earlier idea of organization form being complement to IT investments. They used the term BM design as a design of boundary-spanning transactions of the organization and built the assumption of BM value creation into their hypotheses that the BM design that is centered specifically on (1) novelty and/or (2) efficiency is linked to the performance of the entrepreneurial firm. They leveraged the definition of BM presented by themselves six years earlier (see chapter 2.1.1) and assumed that BMs are capable of creating value in two ways: either (1) by enhancing the customer's willingness to pay, or (2) by decreasing the opportunity costs of suppliers and partners –for instance by improving the transaction cost efficiency. In the former case, that is driven by innovation, value can be created by both recombining existing resources but also by harnessing the resources available to the firm's stakeholders: customers, partners, and suppliers. In the latter case, the total value created for all the stakeholders is the upper limit of value that can be then captured by the firm.

Amit and Zott (2007, p. 182) used the definition of entrepreneurial firm adapted from Bhide (2000, via Amit & Zott, 2007): "relatively young organizations that have the potential of attaining significant size and profitability". Nowadays, the term start-up would be probably used. The data of the study was based on 362 entrepreneurial US and European firms that had their IPO between 1996 and 2000.

In order to conduct a regression analysis, the researchers used two independent variables of BM novelty (1) and efficiency (2) based on the BM design mentioned earlier (see chapter 2.1.2) and then selected 13 items to measure design efficiency and another 13 items to measure design novelty (see Figure 9). The strength of each item was then evaluated using Likert-type scale and assigned a standardized score, which were then aggregated for each design theme into an overall score for the composite scale by applying equal weights. After validating the internal consistency and reliability of the measures Zott and Amit had developed a set of specific quantitative measures of scale with which each firm's BM in the sample could be measured regarding the BM novelty and efficiency. The logarithm of the market value of firm equity was used as a measure of performance and dependent variable, because entrepreneurial, or start-up, firms in the sample had sparsely measurable historical accounting data and many had negative earnings, few tangible assets and low or negative book values. This followed the reasoning of Stuart et al. (1999, via Zott & Amit, 2007), by which perceived performance as stock market value is applicable in entrepreneurial setting due the high levels of uncertainty associated with the potential of such firms. Industry specific resource munificence measures could not be leveraged in the study, as many of the firms spanned multiple industries. Therefore, the authors included resource scarcity to the model by adjusting the observation times of performance measurements to time periods that were distinguishable from each other. In Q4 of 1999, the dotcom bubble was still expanding, and resource munificence was high, whereas in Q4 of 2000 the bubble had already burst, and the resources had become significantly sparser. The researchers used multiple control variables that could influence the market value of equity, such as competitive threat and estimated market size. The former which was measured on a Likert scale based on wide array of information including but not limiting to annual reports, prospectuses, benchmark studies and Hoover's database, that lists the main competitors of each firm. Firm-level control variables included firm age, size as a logarithm of the total number of employees, country of origin controlled with a North America vs Europe binary dummy variable, and expenditures on R&D, advertising, and capital. According to the authors, the firm's size could be viewed as a proxy variable for the firm's bargaining power, following a logic where the larger the firm is, the greater potential it has for value creation and bargaining power, and therefore better performance. Research and development costs were chosen because they have been used in past research as a

proxy for technological strategy (Dowling & McGee 1994, via Zott & Amit, 2007) and advertising costs as a proxy for marketing strategy (Mizik & Jacobson, 2003, via Zott & Amit, 2007). In addition to these control variables, alternative BM design themes of complementarities and lock-in (Amit & Zott, 2001) were implemented as latent control variables, using nine indicators for the former and 15 indicators for the latter. The authors conducted multiple tests to ensure robustness and validity of their model specification before conducting ordinary least squares (from now on OLS) regression.

Efficiency-centered business model design:

1. Inventory costs for participants in the business model are reduced.
2. Transactions are simple from the user's point of view.
3. The business model enables a low number of errors in the execution of transactions.
4. Costs other than those already mentioned for participants in the business model are reduced (i.e., marketing and sales costs, transaction-processing costs, communication costs, etc.).
5. The business model is scalable (i.e., can handle small as well as large number of transactions).
6. The business model enables participants to make informed decisions.
7. Transactions are transparent: Flows and use of information, services, goods can be verified.
8. As part of transactions, information is provided to participants to reduce asymmetric degree of knowledge amongst them regarding the quality and nature of the goods being exchanged.
9. As part of transactions, information is provided to participants about each other.
10. Access to large range of products, services, information, and other participants is provided.
11. The business model enables demand aggregation.
12. The business model enables fast transactions.
13. The business model, overall, offers high transaction efficiency.

Novelty-centered business model design:

1. The business model offers new combinations of products, services, and information.
2. The business model brings together new participants.
3. Incentives offered to participants in transactions are novel.
4. The business model gives access to an unprecedented variety and number of participants and/or goods.
5. The business model links participants to transactions in novel ways.
6. The richness (i.e., quality and depth) of some of the links between participants is novel.
7. Number of patents that the focal firm has been awarded for aspects of its business model.
8. Extent to which the business model relies on trade secrets and/or copyrights.
9. Does the focal firm claim to be a pioneer with its business model?
10. The focal firm has continuously introduced innovations in its business model.
11. There are competing business models with the potential to leapfrog the firm's business model.
12. There are other important aspects of the business model that make it novel.
13. Overall, the company's business model is novel.

Figure 9. The BM design survey items (Zott & Amit, 2007)[8].

[8] Data are from the mentioned source; figure was made by the author.

The results revealed that the innovative BM designs were associated with higher levels of performance even during a time of lower resource munificence, but also suggested that the resource scarcity weakened the entry conditions of novelty centered BMs. Additionally, the analysis suggested that the markets were more receptive towards efficiency centered BM designs when the resource munificence was low. The research also suggested that attempting to focus on both the novelty and the efficiency on BM design could have an adverse effect on performance. However, the proof for such dynamism was statistically weak. Based on their findings and the at the time growing literature on the BMs, the authors speculated that the BM-specific effects may help to explain the variance in firm performance, complementing the firm and industry-specific effects and therefore offering a novel approach on creating and capturing wealth for entrepreneurs. As Zott and Amit framed BM design as a wealth creation tool for entrepreneurial firms, it is kin to BMI.

3.4 Product market strategy versus business model construct regarding implications on internet firm performance

This time Amit and Zott (2008) aimed to expand the scholarly perspective by combining themes from strategic management literature, organization theory and transaction cost economics. The authors conducted an empirical research to explore if the product market strategy and BM are indeed distinct constructs that affect firm performance and whether the two are complements regarding their effect on firm performance.

Menon and Yao (Product Market Strategy, 2016) define product market strategy as: “the collection of choices, actions and activities of a firm that determines how it positions itself in its product markets and allows it to achieve and maintain a competitive advantage”. In their approach to measure product market strategy, Amit and Zott decided to concentrate on two fundamental firm-level strategic decisions that affect the customer demand through price, quality, and timing (Besanko, Dranove, and Shanley, 1996; Porter, 1985 via Amit & Zott, 2008). The first being the type of product market positioning approach, for example whether to aim for cost leadership and/or product/service differentiation (Porter, 1985 via Amit & Zott, 2008), and how the

market entry should be timed (Lieberman and Montgomery, 1988 via Amit & Zott, 2008).

Again, by building on the definition of BM from 2001 and measurement scales of BM from 2007, the authors trained a team of panelists to analyze BM data from IPO prospectuses, annual reports, investment analysts' reports and websites. The initial data set consisted of 300 firms that had their IPO between April 1996 and May 2000, originated either in US or Europe and that used internet as an essential part of their business. Out of the 300 firms, 170 were randomly sampled based on their BM and product market strategies. Building on a product centric value creation model formulated by Brandenburger and Stuart (1996, via Amit & Zott, 2008) the authors developed a value creation model that focuses on transactions that the BM enables, instead of products that the firm produces:

$$TVA = \sum_t \{[P(t) + \sum_i R_i(t) - \sum_i C_i(t) - C_F(t)] \times n(t)\} \qquad (1)$$

The model (1) itself is a combination of two other models, one for value of a specific transaction for a firm and another for the *total value appropriated* (TVA). TVA measures the value appropriated in all types of transactions by the firm, that the BM enables. In the model (1), *P* refers to the price of the good or service acquired in the transaction, that is paid by the customer, *t* is an index for transaction, *i* is an index for suppliers and partners, R_i refers to a revenue that firm gains from supplier or partner in a particular transaction, C_i denotes the cost of a firm to collaborate with a partner *i,* whereas C_F refers to firm's cost for providing its own resources, *F* is the focal firm and *n* refers to the average number of transactions. As profit is calculated by deducting costs from revenue, the part of the model concerning the suppliers and partners $(\sum_i R_i(t) - \sum_i C_i(t))$, signifies the total profit of a particular transaction from all the suppliers and partners. The profit is then added to the sales price of the particular transaction and from which the costs of providing the resources are deducted. Therefore, the part of the model within the square brackets provides a profit of a particular transaction appropriated by the firm, and if the value of it is zero, there is a normal profit and therefore zero economic profit. Consequently, if there is value greater than zero, it is a supernormal profit and implies a monopolistic situation.

The aim of the authors was not to provide a fully specified model but to construct a theoretical backbone for their econometric research and to utilize the superior practical benefits of having a model when inspecting and optimizing a system that consist of multiple complementary elements. When inspecting the model in retrospect, it seems that using a such model would lead to minimizing the number of partners and preferring cooperating with bigger firms that have advantages of scale as a cost reducing factor. In the real world an increasing dependence to a diminishing number of partners or suppliers increases the operational risk for the focal firm, a risk that is nonexistent in the model. When inspecting how the different BMs and product market strategies would affect the TVA, a novelty themed BM would seek to increase the number of transactions, increase the price *P*, and reduce the costs C_i through increased bargaining power. The increased bargaining power stems directly from the novelty of the BM and the succeeding situation where there are no alternatives to what and how the firm offers that in turn inflates the switching costs of all customers, suppliers, and partners (Zott & Amit, 2007). An emphasis on the product market differentiation would allow the firm to charge a higher price from their customers, increasing the price *P*. Cost leadership on the other hand lowers the price *P*, production, and resource input costs: C_i and C_F, respectively (Porter, 1985, via Amit & Zott, 2008). In addition, the number of transactions n increases as the firm attracts an increasing number of price sensitive customers. The early timing of the market entry would allow for a short-term increase in price *P* through increase in customer switching costs, brand awareness, and reputation but also to lower the resource costs of the firm by preempting scarce resources (Lieberman and Montgomery, 1988, via Amit & Zott, 2008). In addition, an attempt to create a new market will cause an initial decrease in the number of transactions n. When considering the joint effects of the novelty-centric BM and the three different product market strategy approaches, Zott and Amit expected them to have a positive marginal effect on each other. On an efficiency-centric BM all transaction costs, C_i and C_F, are lowered, which in turn could attract new customers and increase the average number of transactions n. Initially, when combined with an efficiency themed BM, cost leadership strategy would appear as a good fit. Whereas the synergies with other two strategies could not be clearly predicted.

Amit and Zott used two BMs and three product market positioning approaches as the independent variables. A logarithm of the market of equity was used as the dependent

variable. Control variables chosen for the model included, but were not limited to firm age, number of employees, mode of market entry, estimated market size and existing competition. Without going into too much detail regarding the thorough and well-conducted econometric procedure that the authors conducted, the results were rather consistent with the formal model and suggested that the novelty-centric BM and product market strategies are both distinct constructs that affect the equity of the firm as well as complements. However, the hypothesized positive interaction between the cost leadership strategy and efficiency-centric BM was not supported by the analysis.

3.5 Three-component business model construct and French IT start-up performance

Rédis (2009) conducted an econometric study on influence of BM characteristics on the performance of 112 French IT sector start-ups established between 1998 and 2002. All the firms on the data sample were still operational and independent after five years, which directly implies that the study has left any failed companies outside of the research and this should be considered when interpreting the results.

The choice of BM construct components deployed in the article followed a logic that was not revealed to the reader. The BM definitions and components from authors such as Timmers, Chesbrough, Rosenbloom, Amit, Zott, Rappa and Osterwalder were offered in the literature review part of the article, but only Chesbrough and Rosenbloom (2002) and Rappa (2002, via Rédis, 2009) mention value chain of the company as a component of BM, the former seeing it as an internal concept on how company generates value in itself and the latter as external concept where company is seen as a link in a larger industry value chain. A related term, value network however is mentioned as a BM component by Chesbrough and Rosenbloom as well as by Timmers and handful of other authors (Shafer, Smith, & Linder, 2005). Nevertheless, the BM characteristics or components measured were: (1) the positioning of the business within the industry value chain, (2) the target customer type and (3) the income model. In brief, the first component refers to an industry-based system where initial resources and requirements of the separate firms are compared to the expected future cash-flow during the given timeframe and placed on a chain accordingly from high to low. The second component of the BM construct has been proposed among

other BM researchers by Magretta (2002) and Chesbrough (2003). In this study the target market is defined by the division between business to business (B-to-B) and business to customer (B-to-C) approaches. The third and last component, income model, has been leveraged by BM researchers such as Rappa (2002, via Rédis, 2009) and Osterwalder (2004, via Rédis, 2009), although many BM researchers do not use the term income model but rather focus on the sources of revenue (Timmers, 1998), or revenue model (Johnson, Christensen, & Kagermann, 2008; Osterwalder & Pigneur, 2002).

Rédis hypothesized that the firm's low position on the industry value chain (component 1) affects the business development path positively on how fast the firm can become profitable and how fast the turnover will grow, and vice versa that the high position on industry value chain should require more initial capital in order to get through the time period when the company is not yet profitable. The hypotheses regarding the target market (2) were based on the idea that businesses are more difficult to access and generally take longer time to settle their purchases than individuals. Accordingly, the hypotheses stated that companies dealing with B-to-C will become more profitable more quickly, require less capital and grow their turnovers more quickly than those focusing on B-to-B customers. In the research business income model is hypothesized to affect the firm performance through quantity of individual sources of income that the company possesses, so that the companies with several sources of income are able to become profitable faster, develop turnover faster and require less capital than those with only source one source of income.

The company data covered the first five years of each company, which initially numbered a total of 295. The three dependent variables used in the study are profitability, turnover, and cash flow. The profitability is measured from 0 to 5 depending during which year the firm was able to generate profit. Turnover variable is measured as the turnover at the end of the five-year observation period. Cash flow variable is the total sum of capital collected or raised during the five-year observation period, excluding the government subsidies and initial private funding due the lack of data. However, in observations where the data was available it was noted that in a five-year period the subsidies and private funding do not substantially alter the total amount of supplied cash flow. The three explanatory or independent variables include

positioning, customer, and income number variables. The positioning variable describes the firm's placement on the industry value chain from one to four, somewhat strangely so that the index is ascending as the position on the value chain is descending. Additionally, if the company's position changed during the observation period it was excluded from the sample. The customer variable acted as a simple binary variable: one for B-to-B and two for B-to-C. Also, with the customer variable, if the variable changed during the observation period the firm was excluded from the sample. The income number variable described the number of income sources: index being one if more than 90% of the income originated from the same source and two or more if the individual additional income source provided at least 10% of the turnover. The only control variable used was the founding year of the firm. This was deemed necessary due the drastic changes in credit and venture capital accessibility caused by the bursting of the dotcom bubble.

The only correlation between the independent variables with significance revealed in the descriptive statistics was between positioning in the industry value chain and customer base, resulting from the tendency of B-to-C companies to position upstream on the industry value chain. The multiple regression analyses were performed on factors which determine: (1) how long it takes the company to become profitable, (2) turnover development in five years and (3) the total capital raised. The first (1) analysis revealed that the model could explain 29.9% of the relative variation of profitability variable and therefore indicated that the chosen BM characteristics hold a significant influence over the time it requires for a start-up to become profitable. The variable with the largest coefficient (*1.154*) and high statistical significance ($p < 0.01$) is the choice of customer base, as B-to-C firms tended to be able to make their firms profitable faster than the B-to-B orientated firms. This finding confirms the profitability hypothesis regarding the target market but casts a doubt regarding the significance of the value chain theory hypothesis, as both the coefficient (*0.298*) and significance ($0.05 < p < 0.1$) were meager at best. Nevertheless, the results were deemed to confirm the hypotheses regarding the low position on the value chain and the ability to become profitable more quickly. The number of sources of income had a positive coefficient (*0.295*), which Rédis stated to follow the logic represented in his hypothesis, but as the variable possessed a low statistical significance ($p \geq 0.1$) the respective hypothesis could not be confirmed. The second (2) analysis demonstrated

that the model could explain 23.4% of the variance regarding the turnover. The model coefficients revealed that the firm's position on the value chain had a large and significant effect (coefficient *6,001* and *p<0.01)* to the turnover at the end of the fifth financial year. This stands to strengthen the hypothesis that firms on the lower levels of the value chain would be able to generate turnover faster and therefore reach to higher amounts by the end of the fifth year. The choice of the customer had a large coefficient (*7.906*) but being significant only at the 5% threshold, still supporting the connection between the company profitability and choice of customer, at least within the first five years of the firm's existence. The regression analysis suggests an inverse relationship (*-3.791*) between the number of income sources, however, with low statistical significance ($p \geq 0.1$). The third (3) regression model regarding the total amount of capital attained, utilized the founding year as the control variable but only managed to explain 8.7% of the variance. The only statistically significant ($p < 0.01$) variable was the control variable, that had an inverse effect (coefficient *-2,474*) on the total capital amounts raised. This could be expected as the investments made by the French venture capitalists first soared from 47 M€ Q1 of 1998 to 667 M€ Q1 of 2000 and then plummeted to 271 M€ by the Q2 of 2002 (Chausson Finance Index, 2006, via Rédis, 2009). On the discussion part of the research Rédis (2009, p. 305) wrote that "These results differ from those of Lasch et al. (2005) as the latter argued that the B-to-C customer choice tended to have a negative impact on the IT start-up survival rate". On the contrary, considering the fact that the failed firms were not allowed in the data set, the combined results suggest that while the target-market choice of B-to-C customers has a negative effect on the survival rate, the firms that make it through generate more profit and are able to become profitable more quickly.

3.6 Business model as a perpetrator of internet start-ups' failure

For figuring out why some internet based start-ups fail when others succeed and get further series A funding[9], Spiegel, Abbassi, Zylka, Schlagwein, Fischbach and Schoder (2015) conducted a mixed-method study including a series of 17 interviews

[9] Series A funding refers to the first major round of financing of a start-up firm, organized by a professional institutional investor. However, in most cases some initial capital has been gained prior series A funding through one or more seed rounds. (Thomson Reuters, 2020).

with start-up founders and a social network analysis for 70 US start-ups, that utilized internet in their business operations and focused on the consumer market segment as well as their 145 founders.

The authors leveraged the simplistic BM definition of George and Bock (2011), but included variables from other BM constructs such as value proposition and product-market fit. Value proposition has been suggested by BM researchers including for example Magretta (2002) as well as Chesbrough and Rosenbloom (2002), whereas product-market fit can be found from a book named Value Proposition Design by Osterwalder, Pigneur, Bernada and Smith (2014, via Spiegel, et al., 2016). Overall, the BM construct interpretation used in the research focused on the development of the BM.

The findings of the research confirmed the prior research that BMs of start-ups are constantly changing (Shirky, 2008, McGrath, 2010 via Spiegel, et al., 2016; Teece, 2010) and dynamic (Al-Debei & Avison, 2010 via Spiegel, et al., 2016; Hedman & Kalling, 2003, MacInnes, 2005; Osterwalder, Pigneur & Tucci, 2005), and that the key for gaining funding lies in the excecution and constant testing of the model as well as in the founders social capital. Founders with more substantial professional social networks were able to leverage the information and status benefits gained from their contacts to develop better BMs. These findings tell a similar story to that of Andries and Debackere (2007) who offered earlier empirical evidence that the BM adaptation is positively related to firm performance and that the adaptation itself is subject to the founders' abilities.

3.7 The 55-pattern business model taxonomy on survival rates and revenue growth in Germany and US based firms

In order to predict the success of a particular BM, Böhm, Weking, Fortunat, Müller, Welpe and Krcmar (2017) combined machine learning and statistical approaches, such as cluster analysis and support vector machines with the four-component BM framework (see Figure 6) of 55 BM patterns developed by Gassman, Frankenberger and Csik (2014).

They analyzed a total of 181 German and US based firms of which 31 had ended up in bankruptcy. Each firm was assigned the fitting BM patterns by using a vector of 55 binary variables. For clustering the firms, authors used k-means algorithm (Jain, Murty & Flynn, 1999 via Böhm, et al., 2017) with squared Euclidean distances and resulted in 12 distinct BM clusters.

The authors used two metrics for measuring the success of a firm: first (1) whether the firm had survived without bankruptcy and then (2) how much did the revenue grow relative to the actual revenue. The revenue growth was weighted so that the less the firm had revenue to start with the more revenue had to grow to be deemed successful.

The results showed a 100% survival rate for clusters called *Freemium Platforms* and *Innovative platforms*. The former BMs are built around a free basic service that attracts customers and generates revenues by additional chargeable offers. The latter is more complex but mainly focuses on *Aikido* BM in which an offering of the firm has been differentiated and developed to counteract the mainstream competition. In addition to the high survival rate, both BM clusters demonstrated a tendency for a slow revenue growth: 50% and 67% respectively. Similar survival-slow growth combination was observed with *Add-On Layers*, that focuses on offering a cheap basic service and premium priced additional services. The self-explanatory *E-Commercer* cluster had a low survival rate and mediocre revenue growth rate, confirming to the idea of a highly competitive market, where the winners do take it all. Perhaps the most interesting cluster, the *Long Tail Subscribers* is based on the combination of low price and subscription model. Especially when working with digital goods, such firms can gain a large enough customer base and grow fast, having a survival rate of 94% and 75% of the firms experiencing fast growth.

This BM construct is somewhat problematic from the point of view of economics, as it does not exactly represent what economics refer as a formal model, nor do the researchers try to deploy it as such. Referring to Massa, Tucci and Afuah (2017) the BM taxonomy developed by Gassman, Frankenberger and Csik (2014), falls under the first category BM interpretations that describe attributes existing firms especially the generation and capture of value.

4 BUSINESS MODELS, INDUSTRIAL ORGANIZATION AND STRUCTURE-CONDUCT-PERFORMANCE PARADIGM

Until now, this thesis has covered the brief history, definitions, and variables of the BM concept, viewed the concept from the accounting perspective, peeked into a dynamic sub-branch of BM research called BMI, offered a working definition suitable for economic theorizing for the BM and investigated the business modelling practices both in theory and in empirical practice. In this chapter, we will focus on inspecting the performative BM concept through the subject lens of *industrial organization* (IO). This inspection is done with intention to form a picture of how structure-conduct-performance (hence SCP) paradigm, could assist us in connecting BM theory to the IO and to allow the applying of BM concept in new research topics, such as market concentration or power.

4.1 Industrial organization

Where the neoclassical theory of the firm is based on the static conception of competition and the models leveraged in the theorizing focus on the long-run equilibrium, both the Austrian school economists and Schumpeter (1928, 1942/2008) viewed the competition as dynamic and the long-term equilibrium unsustainable for the economic agents and agreed on the premise that information is always imperfect (Lipczynski, Goddard, & Wilson, 2017). However, the latter two viewed the role of the entrepreneur differently: in Schumpeter's view the entrepreneur initiates the change through innovation whereas the entrepreneur viewed from the perspective of the Austrian school responds to the information generated exogenously (Lipczynski, Goddard, & Wilson, 2017). The field of Industrial Organization (IO), which came to existence in the 1930s (Faccarello & Kurz, 2016), has been framed as the empirical counterpart for the static and dynamic views of the competition (Lipczynski, Goddard, & Wilson, 2017). IO analyses the industry landscape empirically and then develops theories based on empirical data to explain the performance and behavior of the firms and their respective industries (Caves, 2007; Schmalensee, 1988) in addition with analysing the effect that a public policy has to businesses (Stigler 1968, via Schmalensee, 1988). A major part of the early research in IO, referred as the first wave

or old industrial economics, was based on the SCP paradigm (see Bain, 1951) and was heavily orientated towards empirics instead of existing theory (Caves, 2007).

In 1937 Ronald H. Coase, Nobel Prize winning economist, questioned the underlying reason why firms exist and allocate resources as conscious decision makers within the market, instead of simply replacing their function by utilizing the price mechanism. Stemming from this question rose an idea of a transaction costs, a type of cost that arises from employing price mechanism. The fact that transaction costs exist and are higher than zero is what makes firms emerge and grow to a point where additional allocative measure would cost more internally than it would on the market. Later, this idea brought about the field of economics called transaction cost economics, which we also observed to be used in connection with BM research by authors Amit and Zott in the last chapter. More importantly to this thesis, Coase was trying to develop a theory which would be able to analyze the determinants of the organization of industry (Coase, 1972), from firm level to industry level.

The new IO, also referred as the second wave, started in 1970s and in contrast to the old IO it had a more theoretical emphasis. The new IO, being more focused in strategy and conduct of the firm, made significant progress with models including dynamics and asymmetric information. The second wave brought noncooperative game theory to the forefront of research in IO. (Tirole, 1988.)

4.2 Structure-conduct-performance paradigm

The SCP paradigm developed mainly by Mason (1939, 1949) and Bain (1951, 1956, 1959), is based on the idea that the structure of a market influences the conduct of the businesses that are part of the market, and then in turn the conduct affects the performance of the firms (see Figure 10). The three-part link described by the SCP paradigm is also assumed by the neoclassical theory of the firm (Mason, 1949). The appeal of SCP paradigm resides in its ability to reduce the whole industry's data into meaningful categories (Bain, 1956), synergies of which can then be empirically analyzed by the researchers and practitioners (e.g., policymakers). This classic SCP paradigm dominated the field of IO from its early days in late 1930s to early 1970s (Faccarello & Kurz, 2016).

Figure 10. The SCP paradigm.

4.3 Synthesis of the structure-conduct-performance paradigm and the concept of business model

The idea of synthesizing BM concept with the SCP paradigm has been voiced only once prior to this by Cheng, Song and Chen (Research on the Theoritical Boundary of the Business Model Concept, 2011). Their framework was titled as "environment structure" – "business model" – "performance" framework, abbreviated SMP and it included a definition for BM as well as ready-set variables for the BM concept, that all fit within the conduct-part of the SCP paradigm. However, their suggested definition and variables are exclusive in nature and not on par with this study's aim to treat different approaches regarding performative BM concept inclusively and to help integrating them with the existing economic theory. Nevertheless, the placement of BM concept in the conduct-part of the SCP paradigm is fitting considering the existing BM theory and as observed so far in this thesis, supported by the empirically proven performance implications of the BM and BMI concepts.

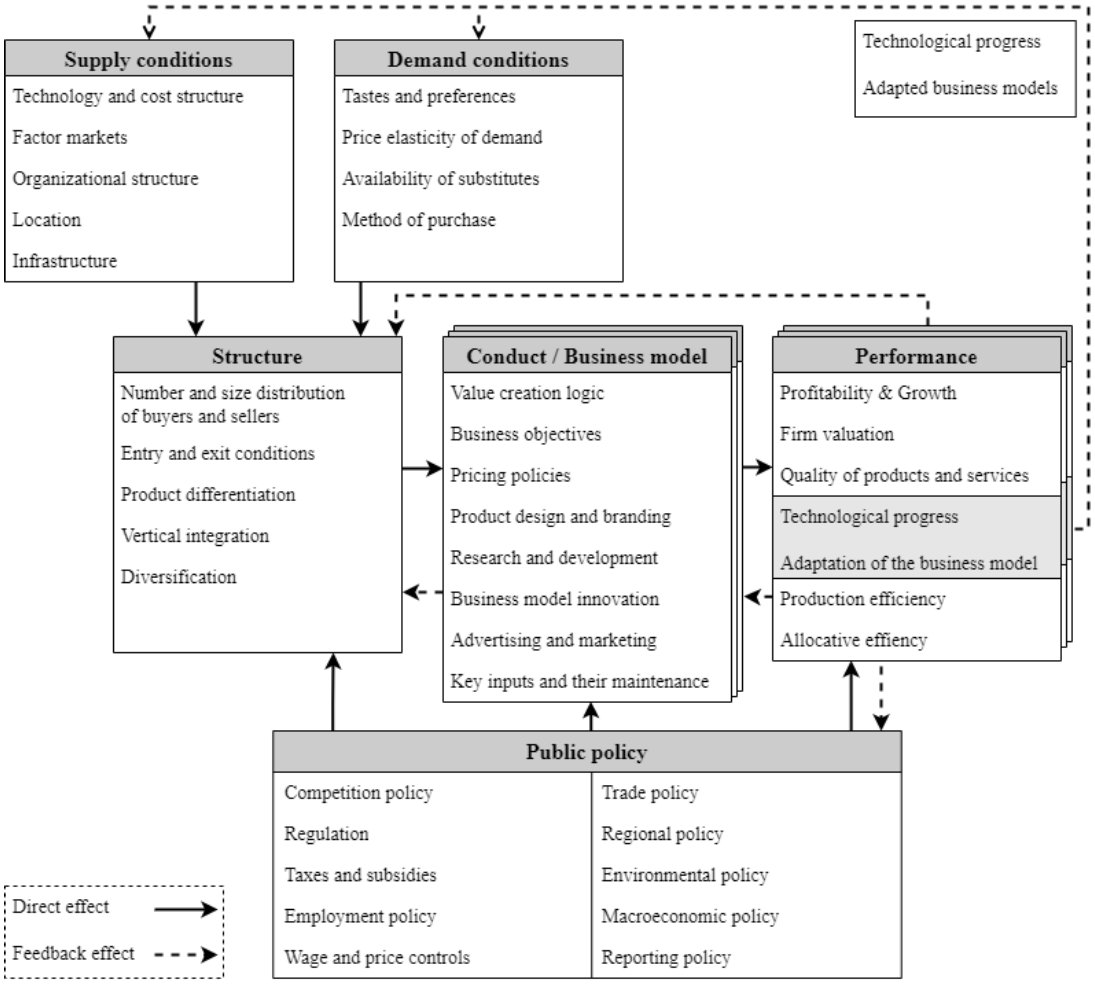

Figure 11. Synthesis of the structure-conduct-performance paradigm, the business model, and the business model innovation concepts or industry-business model (adapted from Lipczynski, Goddard, & Wilson, 2017 and Cheng, Song & Chen, 2011).

BM concept is a micro-firm level concept whereas SCP paradigm includes elements from both micro-firm and macro-industry levels. Therefore, the proposed synthesis of the two can offer BM research a more holistic economic perspective. Figure 11 displays a schematic representation of the SCP paradigm, fused with BM concept, where the *conduct* level has been replaced or supplemented with the BM framework (similarly to Cheng, Song & Chen, 2011) that describes the conduct of the firm, resulting from underlying *structure* of the industry and directly or indirectly affecting everything from the *supply* and *demand conditions* to *public policy*. In addition to the direct flows between the structure, conduct and performance, feedback effects, running so-to-say upstream, were later included in the SCP paradigm between all three components (Phillips, 1976; Clarke, 1985) to account for the dynamics taking place between different stages. The proposed synthesis of the SCP-paradigm and BM

concept is to be referred as business-industry model in order to differentiate it from the earlier mentioned SMP paradigm and to avoid using the term paradigm for a model.

The business-industry model has three major differences compared to the original concept of SCP-paradigm. Firstly, the representation of the SCP paradigm by Lipczynski, Goddard, and Wilson (2017) held public policy as an exogenous variable, defined by the forces residing outside of the SCP paradigm, while the author of this thesis argues that the performance of the firms, the new technology that they create and deploy as well as the novel BMs that they utilize do have a feedback effect on the public policy. As an example, the recent regulation on data protection and privacy in the EU and the European Economic Area, The General Data Protection Regulation (GDPR) 2016/679 (The European Parliament and the Council of the European Union, 2016). Albeit the GDPR could be viewed to result from technological development, it could as well be a result of the development of never-before-seen BMs, where collecting digital data of the service or product users is a central part of the value creation logic of the firm. Another recent example where new technology and BMs can cause pressure on policymaking, is hypothesized by Autor et al. in *The Fall of the Labor Share and the Rise of Superstar Firms* (2020), where the authors point out that in many highly concentrated industries there are very large firms such as Facebook, Apple, Netflix and Google, which despite being big by every other definition, employ relatively little amount of people. Autor et al. emphasize the technological development as the key factor for the concentration of market power and the disproportional development of aggregate share of labor in the economy and do not mention the BM concept. However, the author of this thesis suggests that there is a connection between the superstar firm theory and the concept of BM. The hypothesized connection is based on a simple observation that the BMI as active strategic development process has been proven to have a large effect on performance and that the firms Autor et al. name as the exemplar superstar firms are the very firms that stand out as example beneficiaries of innovative BMs.

The second significant difference to the original SCP paradigm is that in the original version of the schematic, the only factor affecting the supply and demand conditions is technological progress, resulting from the firm-level research and development, but the business-industry model parallelizes the technological progress with the adaptation

of BM, which in turn is a result of BMI. This effect of a non-technological form of conduct to the supply and demand conditions is also supported by the emerging view in BM research where the value creation mechanism of the firm is considered to partially originate from both supply and demand sides, instead of just the supply side (e.g., Osterwalder & Pigneur, 2010; Massa et al., 2017; Atkova & Ahokangas, 2020). To demonstrate this effect, we can consider Netflix that had its IPO in 2002. The firm takes advantage of the lowered replication and transportation costs, brought about by digital economics, and offers their customers to stream an unlimited amount of digital video-format entertainment against a monthly payment. Whereas the value creation logic of Netflix would have been unattainable without the developments in digital technology, the fact that the firm deployed it successfully and the way that they did, has had a direct effect, among other things, on consumer preferences and prices. Therefore, affecting to the future course of other existing video entertainment firms and creating a new market altogether.

The third major difference between the SCP paradigm and the industry-business model is that: whereas the SCP-paradigm simply combines all firms operating on one industry under a single conduct stage leading to a single performance stage, the proposed synthesis treats every firm operating on a specific industry as an individual economic decision-making agent with a unique conduct, or BM, leading to an equal number of performance indicators, which however could be aggregated should that be purposeful for the research, hence the conduct/BM and performance stages in Figure 11 are pictured as stacked. SCP-paradigm as depicted in the Figure 10 is considered as a part of the *old industrial organization* (Caves, 2007), that emphasized on the importance of industry structure as a determining factor for the level of competition and threated the firms as passive entities, which only differed in size. Diverging from this view, the *new industrial organization* deploys a game theoretic approach (Bagwell & Wolinsky, 2002) and emphasizes on the importance of strategy and conduct, promoting individual firms as active decision makers. Here, the business-industry model pictured in Figure 11 with its feedback loops and firms treated separately, could be viewed as a combination of the old and the new IO, where also the game theoretic approach could be implemented.

The business-industry model allows us to connect the static perception of the BM with dynamic BMI concept and the effects that these have on both the micro-firm level and macro-industry level, in combination with other effects that play a part on the industry-level picture. Thus, creating a view of the industry and the BMs that are deployed in it, as a complex system.[10] While the conceptualization of the business-industry model lists variables, they are arbitrary in nature and as with the offered working definition for BM, can and should be replaced with variables that have the best fit regarding the intended usage of the model.

[10] See *From Structure to Process: Dynamic Aspects of Business Model Change* by Atkova and Ahokangas (2020) for five basic principles of complexity theory and applying it to the evolution of BMs.

5 PROBLEMS AND CRITIQUE OF BUSINESS MODELS

In a way, problems that an observer finds in a certain matter tell as much of the matter as the observer itself. Regarding BMs, a great deal of the problems originates on the diverse meaning or interpretation of the BM concept, as well as the numerous subject matter lenses that the concept has been observed through. While the term itself cannot be held accountable for the bubbles and bursts of the economy, it has been argued that the BM concept has deceivingly led companies that followed presumably innovative BMs into both unrealistically high market valuations and bankruptcies (DaSilva & Trkman, 2014; Shafer, Smith & Linder, 2005).

As discussed earlier, the sheer variance in the definitions can be viewed as a problem. In his 2010 article *Business Models, Business Strategy, and Innovation*, Teece stated that the term BM, like many other interdisciplinary terms, is often used but rarely analyzed and therefore poorly understood. In addition, he noted that the BM does not have a theoretical grounding in economics nor in business studies. Along the similar lines wrote Arend (2013, p. 392), who stated that the BM has a weak theoretical grounding and is strong on redundancy when used to describe how a firm operates and goes as far as to say that: "On one (extreme) hand, it could be argued that the idea of the business model has been yet another un-needed re-labeled reinterpretation of the profit equation in search of some distinction as a new level-of-analysis". According to Porter (2001, p. 13), an often-cited critic of the seeming ambiguity of the BM concept, the definition of BM is: "murky at best" and he viewed the fact that BM cannot be evaluated independently of industry structure as problematic.

From a scholarly standpoint the unclarity regarding the term's definition and to what it exactly refers to combined with high publishing quantity has led to an unfortunate tendency of BM cannibalizing both itself (as the term has a myriad of different meanings and uses) as well as other relevant terms. Such development makes an information retrieval process difficult for anyone interested in the BM term from a certain perspective or of a different but namely similar term.

In his article *Strategy and the Internet,* Michael E. Porter (2001, p. 13) criticized the BM approach to management harshly as:" … an invitation for faulty thinking and self-

delusion". He noted that instead of well-researched concepts of strategy and competitive advantage the people operating on the digital market preferred to use the BM term instead. However, Chesbrough and Rosenbloom (2002) have argued that there are three key differences between the strategy and BM. Firstly, strategy emphasizes on value capture and sustainability whereas BM is built around the idea of value creation for the customer. Secondly, BMs by and large do not concern the financial dimension, while for example issues of financing the firm and creation of the value for the shareholders are explicitly answered under the domain of strategy. Lastly, the assumptions regarding the knowledge held by the firm and its stakeholders differ between the BM and strategy.

The BM employed in a financial reporting setting discussed in chapter 2.1.3, such as annual reports, will only include the data that the firm is forced to give out by regulatory enforcement, and that they are willing to disclose voluntarily (Nielsen & Bukh, 2013). Therefore, to leverage a BM concept for financial reporting in a manner that it simultaneously differentiates the firm from others, explains the firm's competitive advantage comprehensively and describes the value capture, and creation, of the firm appears to be difficult without also exposing information that should not be published for strategic reasons (Nielsen & Bukh, 2013). For the performative, purely firm internal or external research, such limitations do not exist. However, such data may be temporarily unavailable for an external researcher, making up-to-date data-based modelling and forecasting difficult.

6 CONCLUSIONS AND POSSIBLE TOPICS FOR FUTURE RESEARCH

As stated in literally hundreds of studies before, a more outspoken consensus for a more unified BM theory is required to increase the reusability and coherence of BM research efforts, as well as to ease the barrier of entry for those who are willing to enter the research field. The cannibalization of the BM term regarding both itself (as the term currently has numerous meanings) as well as to other closely related concepts is real and will not be fixed until the naming practice in BM research will be reworked.

The working definition proposed in this thesis is intentionally inclusive to make way for research efforts regarding the performance implications that different combinations of variables and the potential undiscovered synergies between them can have. The developments of financial reporting regarding the BM will without a doubt play a part in shaping the BM research of the future, as BM researchers are highly dependent on financial reporting data for their empirical research. For this, the author of this thesis bids the different camps of the BM research to practice and enhance the communication between the different branches of science invested in the matter. Naturally, the significance of efforts already made, such as the founding of the Journal of Business Models is not to be downplayed.

Until now, the BM theory has mainly resided within microeconomics and with little to no connection to the macroeconomics or industrial organization. However, as the BM and BMI are now being recognized as forces with major economic influence, it is only logical to assume that the macroeconomic implications do exist and are measurable. As Demil, Lecocq, Ricart and Zott (2015, p. 2) noted: “Examples of recent business models that have profoundly impacted and indeed changed the way people live, work, consume, and interact with each other are plentiful consider Airbnb, Apple, eBay, Facebook, Google, or Grameen Bank (Yunus, Moingeon, and Lehman-Ortega, 2010).” The implications regarding these firms are clear, and they have not gone unnoticed by the economists. Yet, the wider picture regarding how BM and BMI mold the society we live in, has not been thoroughly researched unlike the other famous force: technological progress. Therefore, the author of this thesis suspects that a new macroeconomic and industrial organization branches will sprout on the BM research tree. The hypothesized future research regarding BMs, could for example figure out

the effect of BMs and BMI to developments regarding market power, concentration or labor share and therefore add nuance to the existing research in macroeconomics, and industrial organization. The synthesis of the SCP paradigm and BM could or could not be leveraged for the future industrial organization-based BM research. As with the development of the industrial organization since the SCP paradigm, it would also be highly interesting to see a game theoretic approach to BMs in the future. However, for this purpose, perhaps a more detailed or fitting interaction map between the firms on industry-level is required than the industry-business model drafted in this thesis.

Regardless of whether the reader of this thesis will acknowledge the proposed working definition, conscious linking of BMs to economic models and the proposed industry-business model or not, the BM will remain as a versatile and widely useful analytical tool for economic research.

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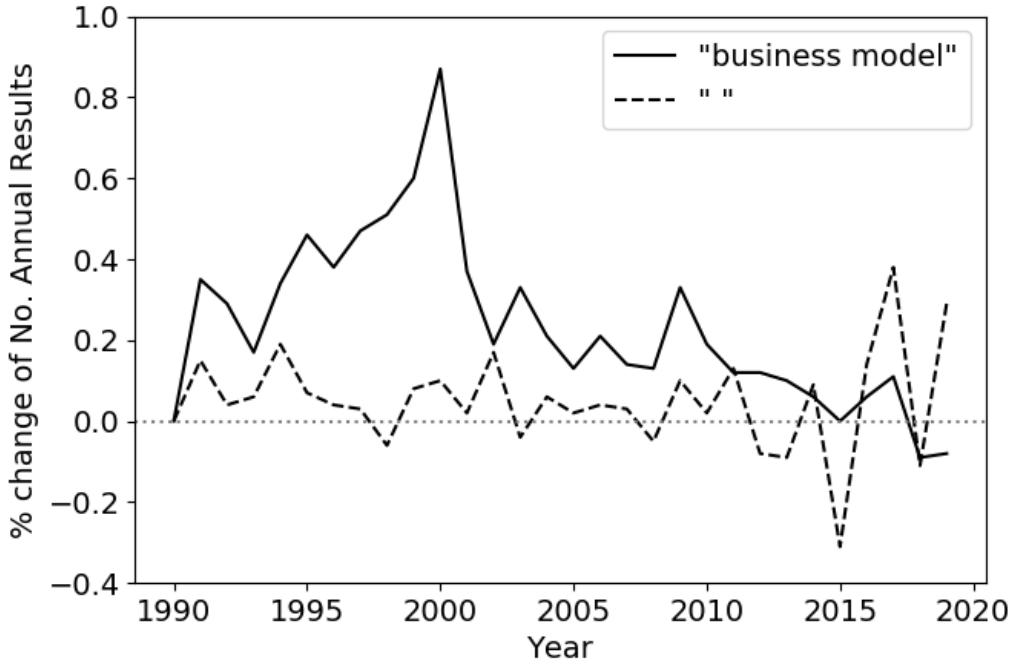
Appendix 1

FURTHER QUANTITATIVE LITERATURE ANALYSIS

Percentage change of total annual Google Scholar search results



A search query using space (or blank) character was used to map out the total number of annual publications from 1990 to 2019. Then, the historical annual growth rates in percentages were measured from both totals and BM publications and compared on the above graph.

Two observations can be made from the comparison. Firstly, the number of BM publications has been increasing every year until 2018, whereas the growth rate of total number of publications has stagnated multiple times during the period. Secondly, the number of annual publications indexed after 2017 dropped significantly on both search terms. However, the total amount of indexed publications rebounded for the year 2019, whereas the BM relevant publications did not.